BIRDS and NATURE

IN NATURAL COLORS

A MONTHLY SERIAL

FORTY ILLUSTRATIONS BY COLOR PHOTOGRAPHY

A GUIDE IN THE STUDY OF NATURE

TWO VOLUMES EACH YEAR

VOLUME XI

JANUARY, 1902, TO MAY, 1902

EDITED BY WILLIAM KERR HIGLEY

CHICAGO

A. W. MUMFORD, PUBLISHER

203 Michigan Ave.

1902

Copyright, 1902, by
A. W. Mumford

505.73
B618
v.11
Jan.-Dec.
1902

INDEX.

Volume XI—January, 1902, to May, 1902, inclusive.

	PAGE.
Animal Emotions. Alberta A. Field	175
Antelope, The Autobiography of an. Alice Moss Joyner	149
April (Poem). Walter Thornbury	145
Arrow Head, The (Illustration)	182
Awakening (Poem). M. Townshend Maltby	144
Berries of the Woods. Ella F. Mosby	31
Between the Daylight and the Dark. S. E. McKee	12
Bird that Hung Himself, A. Mary McCrae Culter	65
Bird, The Pocket—The Scarlet Tanager. Belle Paxon Drury	89
Bird, The Sing-Away (Poem). Lucy Larcom	158
Birds and Flowers of the Mississippi Gulf Coast, April. James Stephen Compton	214
Bird's Complaint, The (Poem). Henry Johnstone	72
Birds in Their Winter Home, The—In the Fields. James Stephen Compton	90
Birds in Their Winter Home, The—In the Woods. James Stephen Compton	43
Birds on the Wing. M. D. Tolman	24
Birds, Some of Our Winter—In Eastern Massachusetts. Winthrop Smith	67
Birds, The (Poem). Elizabeth Grinnell	192
Birth Stones (Illustration). Oliver Cummings Farrington	216
Bouncing Bet, or Soapwort (Illustration)	86
Calamus (Illustration). Albert Schneider	191
Canyon, Evening in the (Poem). M. E. Dissette	30
Cardinal Flower, The (Poem). Belle A. Hitchcock	48
Cat, The Domestic (Illustration). John Ainslie	83
Catastrophe in High Life, A. M. Leila Dawson	80
Cattle, Domestic (Illustration). John Ainslie	179
Cloud, The (Poem). Shelley	236
Cohosh, The Black (Illustration)	182
Cotton Plant, The (Illustration). Albert Schneider	232
Cow, The Domestic (Illustration)	178
Crocus, The (Poem). Madeline S. Bridges	127
Cubby (Poem). Mary Morrison	85
Daisy, The Blue Spring (Illustration)	228
Easter Carol (Poem). Anna M. Pratt	97
Easter Lilies. Claudia May Ferrin	108
February (Poem). William Cullen Bryant	49
Felines, Music-loving. S. Virginia Levis	92
Fire-flies (Poem). Cora A. Matson Dolson	92
Forest Monarch, Death of the (Poem). George W. A. Phillips, Jr	96
Frog, A Varicolored. Abdrew James Miller	120
Garnet (Illustration). Oliver Cummings Farrington	170
Gobbler, The, Who Was Lonesome. Mary Catherine Judd	198
Hand that Struck Thee Down, The (Poem). J. D. La Barre Van Schoonhoren	197
"Hark, Hark, the Lark!" (Poem). Edward O. Jackson	193
Hawk, The Broad-winged (Illustration)	71
Hawk, The Sharp-shinned (Illustration)	23
Heron, The Little Green (Illustration). Henry H. Lane	194
Homes, Two Strange. Mary McCrae Culter	32
Horse, The (Illustration). John Ainslie	225
Hummingbird, Antics of a. George Bancroft Griffith	188
Hummingbird, The Black-chinned (Illustration)	146
Hummingbird, The Broad-tailed (Illustration)	62
Irish Moss (Illustration). Albert Schneider	47
Killdee, The Call of the (Poem). Mary Morrison	109
Kinglet, The Golden-crowned (Illustration)	2
Little Feathered Boys and Girls, The (Poem). Blandina D. Miller	231
Liverwort, The Round-lobed (Illustration)	137
Longing (Poem). Frank Monroe Beverly	156
March (Poem). Royal Arcanum	128
Martyrs, Our Little (Poem). George Klingle	113
Melody, A (Poem). Amanda M. E. Booth	227
Midwinter (Poem). Hattie Whitney	79

Migration, The Spring—In Central Mississippi. James Stephen Compton..... 186
Migration, The Spring—The Warblers. James Stephen Compton..... 138
My Red-headed Neighbors—A Story About Red-headed Woodpeckers. William Harrison Lewis 17
Natural Objects, Early Recollections of. Berton Mercer..... 32
Nuthatch, The Brown-headed (Illustration)..... 14
Nuthatch, To a (Poem). Edith Thomas..... 13
Opal (Illustration). Oliver Cummings Farrington..... 122
Oriole, The (Poem). Lulu Whedon Mitchell..... 209
Oriole, The Orchard. Addie L. Booker 210
Ornithologist's Year Book, From an. Ella F. Mosby..... 164
Owl, The Burrowing (Illustration)..... 155
Oyster, Book and Mrs. Loveday Almira Nelson..... 53
Pansy of Hartwell, A. Laura Cravens..... 168
Partnership, A Queer. D. Welby..... 61
Phalarope, The Northern (Illustration)..... 110
Pine Tree, The Talking. Loveday Almira Nelson..... 5
Poem (Selection). George Bancroft Griffith..... 164
Poem (Selection). Charles Mackay..... 41
Poem (Selection). Berton Mercer..... 37
Poem (Selection). Sir Walter Scott..... 181
Poem (Selection). John Greenleaf Whittier..... 133
Poppies, California. Clara Hill..... 73
Protest, The Master's (Poem). Hildane Harrington..... 203
Quartz—Crystalline (Illustration). Oliver Cummings Farrington..... 26
Quartz—Obscurely Crystalline (Illustration). Oliver Cummings Farrington..... 74
Rail, The King (Illustration)..... 11
Robin's Plantain (Illustration) 228
Rural Rambles (Poem). Berton Mercer..... 222
Sandpiper, The Red-backed (Illustration)..... 167
Sheep, The Domestic (Illustration). John Ainslie..... 131
Skylark, Missouri. Juliette A. Owen..... 202
Snake-head or Turtle-head (Illustration)..... 86
Snow, Beautiful (Poem). J. Frank Richman..... 20
Soapwort, or Bouncing Bet (Illustration)..... 86
Song for the New Year's Eve, A (Poem). William Cullen Bryant..... 1
Sparrow, The Leconte's (Illustration)..... 107
Spring (Poem). G. Cooper..... 97
Spring Notes from Feathered Throats—In New Jersey. B. F. W. Thorpe..... 161
Spring, The Spirit of. Anne Wakely Jackson..... 163
Squirrel, A Pet. Loveday Almira Nelson..... 140
Squirrel, The Western Pine. J. Mayne Baltimore..... 157
Storm, The Beauty of a. Anne Wakely Jackson..... 133
Stowaways, A Cargo of. Alberta A. Field..... 114
Sugar-Cane (Illustration). Albert Schneider..... 95
Sunset Club, A. Anne Wakely Jackson..... 25
Sweet Flag (Illustration). Albert Schneider..... 191
Thistle, The (Illustration). Charles S. Raddin..... 38
Thrasher, The Californian (Illustration)..... 59
Thrush, The Varied (Illustration)..... 201
Turtle-head or Snake-head (Illustration)..... 86
Twain Loves of Jeremiah. Emily Frances Smith..... 207
Veerie, The (Poem). Isabelle T. M. Blake..... 185
Verbenas, The 228
Vervain, The Blue (Illustration)..... 228
Violet, The (Illustration). Charles S. Raddin..... 134
Vireo, The Blue-headed (Illustration)..... 50
Voices in the Garden. M. Alice Spradlin..... 101
Walnut, The English and Related Trees (Illustration). Albert Schneider..... 143
Warblers, Apple Blossoms and the. Grace E. Harlow..... 220
Warbler, The Audubon's (Illustration)..... 158
Warbler, The Prairie (Illustration) 213
Was It Reason or Instinct? L. P. Venen..... 121
Whale, The Greenland (Illustration). John Ainslie..... 35
What Time o' Year? (Poem). Eliza Woodworth..... 145
Winter Memories (Poem). Alberta A. Field..... 66
Winter's Secret (Poem). Mary Noland..... 60
With Silver Chains and Gay Attire (Poem). George Bancroft Griffith..... 42
Woodpecker, The Hairy (Illustration)..... 119
Wren, The Short-billed Marsh (Illustration). J. Rollin Stonaker..... 204
Wren, The Winter (Illustration)..... 98

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. IX. JANUARY, 1902. NO. 1

A SONG FOR THE NEW YEAR'S EVE.

Stay yet, my friends, a moment stay—
Stay till the good old year,
So long companion of our way,
Shakes hands and leaves us here.
Oh stay, oh stay,
One little hour, and then away.

The year, whose hopes were high and strong,
Has now no hopes to wake;
Yet one hour more of jest and song
For his familiar sake.
Oh stay, oh stay,
One mirthful hour, and then away.

The kindly year, his liberal hands
Have lavished all his store.
And shall we turn from where he stands,
Because he gives no more?
Oh stay, oh stay,
One grateful hour, and then away.

Days brightly came and calmly went,
While yet he was our guest;
How cheerfully the week was spent!
How sweet the seventh day's rest!
Oh stay, oh stay,
One golden hour, and then away.

Even while we sing he smiles his last,
And leaves our sphere behind.
The good old year is with the past;
Oh be the new as kind!
Oh stay, oh stay,
One parting strain, and then away.

—William Cullen Bryant.

THE GOLDEN-CROWNED KINGLET.

(*Regulus satrapa.*)

The autumn wanes, and kinglets go,
Sweet-voiced and knightly in their way,
And all the birds our summers know,
They flock and leave us day by day.

—Frank H. Sweet, "Flocking of the Birds."

In these pleasing words the poet speaks of the kinglets. Yet his words may hardly apply to the Golden-crowned Kinglet, except in the northernmost part of its range, for it winters from the northern border of the United States southward to the Gulf of Mexico. "Muffled in its thick coat of feathers, the diminutive Goldcrest braves our severest winters, living evidence that, given an abundance of food, temperature is a secondary factor in a bird's existence."

But little larger than a hummingbird, though unlike that mite of bird life, it seeks in the cooler air of northern climes a place for its nest. It also breeds throughout the length of the Rocky Mountains and in the Alleghanies as far south as North Carolina.

This tiny and "charming sylvan ornament," both elegant in dress and graceful in movement, is one of the seven known species of kinglets, of which there are but three that frequent the New World. It is very active while searching for its food. Its colors are such that, as it moves from twig to twig hunting for insects among the leaves, it is frequently hard to locate though its voice may be heard among the tree tops.

Truly the name kinglet—little king—is not a misnomer, for the Golden-crown exhibits a decided character in every motion. It is fearless and though it will occasionally scold an intruder, wren-like, it does not usually resent the presence of man. Often in the forest or even in our city parks a Golden-crowned Kinglet will flash by one's face and, dropping to the ground, seize an insect or worm that its bright eyes have detected in the grass, even at one's feet.

Speaking of interesting phases of bird life, Mr. Keyser says, "On the same day my dancing dot in feathers, the Golden-crowned Kinglet, performed one of his favorite tricks, which is not often described in the books. You will remember that in the center of the yellow crown-patch of the males, there is a gleaming golden speck, visible only when you look at him closely. But when the little beau is in a particularly rollicksome mood, or wants to display his gem to his mate or kindred, he elevates and spreads out the feathers of his crest, and lo! a transformation. The whole crown becomes golden! That gleaming speck expands until it completely hides the yellow and black of the crown." May we not say with Mr. and Mrs. Grinnell that Mr. Golden-crown lifts his hat to Mrs. Golden-crown? We may learn patience and to be satisfied with nature as we find it, if we will study the life of the Golden-crown. It is always happy, always cheerful. Seemingly it flies from bough to bough as contentedly in the rain as in the sunshine and in cold as well as in warm weather. In many respects this kinglet resembles the warblers, but it is much tamer. While seeking its food it exhibits some of the characteristics of the flycatchers.

Mr. Brewster describes its song as beginning "with a succession of five or six fine, shrill, high-pitched, somewhat faltering notes, and ending with a short, rapid, rather explosive warble. The opening notes are given in a rising key, but the song falls rapidly at the end. The whole may be expressed as follows: Tzee, tzee, tzee, tzee, ti, ti, ter, ti-ti-ti-ti." Its call note is simply ti-ti uttered in a fine and well modulated voice that is scarcely audible.

FROM COL. CHI. ACAD. SCIENCES.

457

GOLDEN-CROWNED KINGLET.
(Regulus satrapa.)
Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

The Golden-crown selects cone-bearing trees for its nest. This is usually a pensil structure and is hung from the branches at from four to fifty or more feet from the ground. It is globular in form with the entrance near the top. Mosses and dead leaves are used in its construction and it is lined with soft and fine fibers of bark and feathers.

Someone has said of a Golden-crowned Kinglet: "I often spoke to him as if he were a real person; and he appreciated my words of praise, too, without doubt, for he would come scurrying near, disporting his head so that I could catch the gleam of his amber coronal, with its golden patch for a center piece."

THE TALKING PINE TREE.

It was a chilly winter Saturday. Though the winds were cold, the sunshine was bright and warm. After dinner Jacob put on his overcoat and new red mittens and went, as he often did, with his father, who was sexton of Evergreen cemetery. While his father was busy Jacob amused himself.

He had never before noticed how bare the great trees looked. Their limbs reached out like hundreds of crooked arms between him and the blue sky. As he looked around here and there he could see a tree wearing a dark green coat. Most of them were small, but some were tall and pointed. A pretty good sized, umbrella-shaped one grew near where his father was digging a grave.

Full of boyish life and spirits he ran to it playfully shouting: "I am a squirrel hunting a nut and will climb up among your branches." But he tried in vain. The lowest limbs were so high above his head that he could not reach them.

"Never mind," said he, "I will hunt a nut on the ground."

Dropping on all fours he began to crawl around. Soon his hand came down upon something hard under the dead leaves which covered the ground. Now he though he had really found a nut. It was roundish, with blunt spines and woody, and like no nut which he knew. Hunting a loose brick he cracked it upon a stone. Two or three little round things with gauzy wings dropped out.

This roused his curiosity. He now searched round and round for others. He spied a small branch which had broken off and dropped to the ground. As he snatched it up an end whirled round, striking his face. "How you stick!" cried he. He pulled off a mitten to feel what was so sharp. He noticed that the branch was bare, black and full of scars except at the end of each branchlet, where bunches of green sharp needles about as large as his mother's darning needles were growing.

"Why, old tree," said he, "where are your leaves?"

Now the tree heard every word which Jacob said but it could not make Jacob hear its answers.

At the tip of each branchlet was a pink bud, and near some of these was a little, tender thing about the shape of, though smaller, than the English sparrow's egg. These he could pinch into pieces. But lower down on the branchlets, among the queer needles, were others not so large nor so dry as the odd fruit which he had found on the ground. They were not so easily destroyed. He picked them off and put them in his pockets.

"You're a funny tree! Why do you not have nuts which hungry boys can eat?"

Jumping to his feet he looked up into the branches. They were all bare except for the needles growing on the branchlets. The tree was dotted with the odd nuts.

"What kind of a tree are you? You are not at all like our pretty oak or maple trees. Your branches grow nearly straight out. I should not like to live in a graveyard and look at tombstones all the time."

He hunted around for clods and dead branches which, in his efforts to throw over its crown, he threw into and through the tree.

"You'll see, Mr. Tree, some day, I'll be able to throw higher," said our cheerful Jacob.

Just then Rover came running to him and they had one of their jolly romps on the dry grass and leaves. Presently, tired out with their sport, both boy and dog dropped to sleep. Now was the pine tree's chance.

"Jacob, Jacob!" called the tree; "I am a pine tree." One of the little, green fairy spirits who made her home among the branches had cast such a spell over Jacob that now he could hear every word the tree said as plainly as when his mamma spoke.

"When you come to know me and my friends better you will love us for our youth and worth as well as for our beauty," said the pine. "See—the oaks and maples are mere dark skeletons. What you call needles are our leaves. They never all leave us at once. In our family our faithful leaves serve us for two years. When a new growth covered with fresh needles comes at the end of a branch the old needles drop, it is true, leaving our branches full of scars. Since others never grow in these same places our larger branches are left bare; but the bunches of needles on the new growth keep us always green.

"That hard thing which you found, and which you supposed to be a nut, was a mature dry cone. In our cones we hide our seeds, which have wings, so that they fly on the wind to a good resting and growing place. The little, tender balls which you found near the young bud at the end of the branchlet is a new cone just started this year. The harder, darker growth farther down among the needles is a last year's cone.

"My home is not in this country. I was brought from a country of highlands and mountains where the Scottish people live. I am called a Scotch pine. I do not choose to live in a graveyard, but I am willing to serve man and God by doing my best wherever I chance to be. My comrades and I have been placed here by mourning friends for a token of the constant remembrances and love which are held for their friends who have passed away.

"In our native land my brothers grow to be very large, sometimes living for three or four hundred years. As we grow at the top, keeping our rounded shape, our lower branches drop off."

"Are you only useful for planting in graveyards?" asked Jacob.

"Oh, no, indeed! We furnish excellent timber, called red pine, which is of great use for fuel and in ship and house building. When our trees are cut through the bark, sap runs out. When this is strained it is called turpentine, which is used so much in medicine, by painters and by other workmen. Oil of turpentine is also made from our leaves and cones. When you have a very bad cold your mamma sometimes rubs turpentine on your chest."

"Oh, yes, I remember," said Jacob; it has a strong smell."

"The dregs harden," continued the pine, "and are called resin. This is used in making yellow soap, ointments and plasters. Our wood is burned to make charcoal, tar and pitch. Even the soot is saved, and called lampblack.

"Charcoal is good for many things. Doctors use it. Placed in a cistern filter it purifies the water. It is burned for fuel, especially when a fire with no smoke is wanted.

"As water cannot get through tar and pitch, these are used in protecting wood from water. Hence they are put on the outside of ships, on the inside of water casks, and on roofs. They are used in making a black varnish with which people coat iron pumps and fences to keep them from rusting. Did you see the men making the hard asphalt pavement which leads to the vault?"

"Oh, yes. They had a big kettle of tar, didn't they?"

"Yes. Stick out your foot."

Jacob did as told.

"You have shining patent leather tips on your shoe toes. Ask papa to tell you how patent leather is prepared.

"Lampblack is mixed with white lead to make paint. If a little lampblack is used a gray is made. Enough can be used to make the paint black. Less makes a slate color."

"How much you can do! How useful you are!" said Jacob.

"That is not all," said the Scotch pine. "In some places my needles are made into shreds which are used in stuffing cushions. Our roots, which contain so much resin that they burn with a bright blaze, are burned for lights in cottages of the poor. Fishermen make ropes of our inner bark. Laplanders and some other peoples dry and grind our inner bark. After steeping this in water to remove the strong taste it is made into a coarse bread.

"Now," said the tree, who could see some distance, "your father has finished his digging. If you will come again my little fairies can again cast a spell so that we can talk together, and I will tell you something about my cousins. I have a large number of first cousins, second cousins, and more distant ones. Ours is one of the largest tree families."

"Indeed, I will come again."

Just then his father's footsteps among the dry leaves roused Rover, and both jumped to their feet.

"Why!" exclaimed papa; "I supposed that you two rogues had gone home."

When they reached home papa, who knew nothing of pine tree fairies, told mamma that Rover and Jacob had been playing "babes in the wood."

The next week was a stormy one and the days were growing shorter. But on Friday the clouds cleared and Jacob begged to go into the cemetery to play after school. But his mamma said it was too damp. However, on Saturday afternoon she said that he might, and he eagerly donned his overcoat and mittens.

"Good afternoon, pretty tree," he said as he and Rover came near.

As the tree said "How do you do?" it tried its best to nod its head and reach out a limb to shake hands.

The fairy had done as the tree promised, and Jacob heard. He clapped his hands in glee. Thinking that Jacob meant to play with him, Rover showed that he was ready for a frolic. But Jacob curtly said, "Get down, Rover! Listen—the pine tree is talking again."

Rover could not hear the tree, but he sat still and looked at his master in surprise.

"Good old tree," said Jacob in a gentle voice. "I could scarcely wait until today. You promised to tell me of your relations."

"Certainly, I shall be pleased to do so," said the pine, who never tired of talking of the good traits of its family and friends. "Where is the little limb you had the other day?"

"Here it is," picking it up.

"Look closely at my leaves. Did you ever notice anything peculiar about the way they grow?"

"No. Oh, I see. The needles grow in pairs. Two seem to be wrapped together at the stem end."

"That is it. I have a cousin who stands just on the other side of that great elm tree. Under it is a rustic bench. See if by standing on it you cannot reach a twig. If you can, bring it here."

Jacob did as directed.

"Now look at those needles. Are ours alike?"

"No; these are coarser, longer and darker than yours; though they grow in twos."

"Right. Run back and look at the cones."

When he returned he said: "I could not get a cone, but I can see that those are coarser and larger, too."

"How about the shape of the tree?"

"You two grow very much alike."

"That is a first cousin. Its family lives on the mountains of Austria. It is known as black pine or Austrian pine.

"Do you see that tall pine near that massive monument?"

"Where?" he asked, looking around.

"Just behind you," said Scotch pine, nodding its head in that direction.

"Oh, yes, I see now. Such a tall, straight trunk! Its crown grows in a point, making one think of a high church steeple piercing the sky."

"As its limbs are above your reach it is useless for you to try to get a branch. If you will get papa to break you a twig some day, and you examine it, you will find that its needles, which are finer than mine, are in bunches of five. See when the wind blows how gracefully her boughs bend and sway. Go there and look at the cones."

Off he went. Returning soon, he said: "The cones are not at all like yours; they

are long and different in shape. The silky needles look something like a paint brush at the end of each twig."

"It is a far more beautiful tree than I, so straight and lofty. Its pointed top looks down upon all the other great trees in this cemetery. If you could go through Canada and northern United States, especially around the Great Lakes, you would see great forests of this—the white pine. As its wood contains little resin it looks white, and is not so valuable for fuel. As it is easily nailed and worked, it is said to be a soft wood. You can whittle it with your knife which Santa brought you. Furniture, shingles, laths, boards and many other things are made of it.

"If you could tramp around the Rocky Mountains you would find another soft pine tree, popularly called the sugar pine because the burnt resin has at times been used by the Indians for sugar. Coarse cakes are made from its nut-like seeds. Its cones grow to be more than a foot long. Its leaves, too, grow in fives.

"The pine growing in the South, known as the Southern or Georgia pine, has yellow, hard wood. It is heavy and very strong. It makes fine lumber, ties, fuel, fencing and furniture. It is used in shipbuilding and for other things when a durable wood is needed. It is rich in turpentine, resin and tar. Indeed, the markets of Europe are supplied with those articles largely by the Scotch pine and those of the United States, chiefly by the Georgia pine. Because of the length of the southern pine's needles, which sometimes measure more than a foot, it is sometimes called the long-leaved pine. The leaves grow in threes. Its large cone also contains seeds, which are eaten."

One day when visiting the pine, Jacob said: "When I get big I mean to visit some of the pine forests."

"Go as soon as you can, then, my boy. In cutting pine timber men are so thoughtless and lacking in foresight and management that they are being cleared away very fast."

"Then I must try to teach them to know the pines better and to love them more for their beauty and their great usefulness. Then I am sure they will use better judgment."

"Thank you, Jacob."

Another day Jacob asked: "Have you told me of all your cousins?"

"Oh, no, indeed. I have told you of only a few of my nearest ones. There are seventy first cousins, of which thirty-five different ones are American trees. Then there is a host of more distant relatives. There are the twelve spruces, with short, sharp-pointed, four-cornered needles which grow singly all around the branches. They like cool places, and make their homes in great forests at the north or on mountains. The fir sisters and brothers have flat, blunt leaves growing on opposite sides of the branches, making them look like combs. The larches, who lose their needles in the fall; the cedars, the junipers, the arbor vitæ, the great California redwood—there are so many I can not name them all! They all belong to the cone bearing families."

Jacob, who loved the talking pine tree, spent many happy hours in its shade and learning lessons taught by it. Through it he came to know of the wonderful great trees of California; of what the straight, tall masts of ships see; of secrets known only by telegraph and telephone poles; of the sweet sounds of musical instruments; of things which props can tell of mining affairs; of the travels of railroad ties and the tragedies which occur within their sight; of the water folk with whom bridge piles neighbor; of the animals whose hides the evergreen barks help to tan; of the birds and animals who seek the shelter of these trees and feed upon their seeds and young buds; and of beautiful things with which loving hands deck the gay Christmas tree and the hosts of happy children who love it most of all trees.

Every child who will select a favorite tree and watch it with patient, loving care will also find himself helped. Although it may not be able to talk as Jacob's talking pine tree did, if he will but be faithful to its lessons it will teach him many useful facts; will prompt him to reach, like a tree, upward and outward, and to throw out from his life an influence as healthful and pure as the fragrance of the pine.

LOVEDAY ALMIRA NELSON.

FROM COL. CHI. ACAD. SCIENCES.

KING RAIL.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

THE KING RAIL.

(*Rallus elegans.*)

The King Rail is the largest of the American true rails and is favored with a number of popular names. It is known as the Red-breasted Rail, the Marsh Hen, the Sedge Hen and the Mudhen. It frequents the fresh-water marshes of the eastern United States and is found as far north as Maine and Wisconsin and as far west as Kansas.

This fine bird very closely resembles the clapper rail which inhabits the salt-water marshes of eastern North America. The two species, however, may be easily distinguished by the difference in size and color. The clapper rail is much smaller and the upper parts are more ashy or grayish in color and the lower parts are duller and more yellowish.

Fifteen of the one hundred and eighty known species of the family Rallidæ, which includes the rails, gallinules and coots, inhabit North America.

The rails are not fitted for easy flight and find safety from an enemy by running and hiding, only taking to flight when all other means of escape have been exhausted. They not only have "a body proportioned and balanced for running, but also capable of compression to the narrowness of a wedge, in order to pass readily through the thick growths of the marshes, and also to aid them, perhaps, in their peculiar habit of walking on the bottom under the water in search of food." Their feet, because of their large size and the length of the toes, are well adapted to the soft mire and floating vegetation in which they live. With long legs and well developed muscles the rails are able to "run like very witches in their reedy mazes, and were it not for their sharp, cackling voices, their presence would scarcely be detected."

Unless approached too rudely, the female when setting on her nest will allow a very close inspection. She will seem to be as interested in the observer as he is in her. There will seem to be an expression of wonder in her face. If she is approached more closely than she likes she slips from her nest and gracefully runs through the reeds and grass and soon disappears.

The nest is usually constructed with flag stems and grasses. When the nests are built on dry ground they are usually placed in a depression in a tuft of grass and somewhat resemble the nest of the meadow lark. The nests are usually placed over water in tufts of marsh-grass or flags. Frequently the bottom of the nest is in the water and the top a few inches above it.

Mr. Silloway says: "The King Rail is said to be irritable and quarrelsome in its disposition, and it is especially overbearing toward its neighbors. The species should be named the 'queen rail,' for the female is without doubt the head of the family. Is it not she who sometimes takes possession of the homes of her meek neighbors, the gallinules? Is it not she who defends her home so spiritedly when it is threatened? Hence it seems to me that the King Rail is more king by marriage than in his own right. She lords it over the gentle-spirited mudhens with whom she dwells, and frequently saves herself the labor of making a nest and the time to lay so many eggs, by appropriating both nest and eggs of a comfortably settled gallinule. I have frequently found nests containing incubated eggs of the Florida gallinule and fresh eggs of the rail—indubitable evidence to me that the rail was the usurper of the home."

BETWEEN THE DAYLIGHT AND THE DARK.

She sat in the deepening twilight awaiting the coming of her lover. The wind whispered in the rustling tree tops, but she heeded it not, though she turned her handsome head sharply when a thoughtless katydid near her sent forth one shrill note.

"He is late tonight," she murmured softly, as she gave a graceful little shake to her fluffy brown suit and settled herself anew. Then she bent her beautiful head and gently scratched her ear with her right reversible toe.

There came no sound of wings, but the branch on which she sat quivered beneath an added weight, and she rolled her round eyes affectionately toward the new comer, a great horned owl, with a welcoming gurgle, in which was a note of expectation. Her lover was a handsome fellow, with great tufts over his ears, and he had brought a "gift for his fair," though it was not a dainty box of bonbons produced from his overcoat pocket. He lifts his broad wings, bends his head, and produces from his crop a newly caught frog. His mistress nestles close, with fluttering wings and upturned beak, and receives the great dainty with an evident pleasure which delights him. He tries again. This time the convulsive effort brings forth to light a field mouse, garnished with two grasshoppers and a black cricket, which his lady receives with the pretty infantile attitudes and flutterings which all ladies think so becoming and attractive. Then they snuggle up close together, as is the way of lovers, and sit so still they might have been mistaken for a pair of stuffed owls—indeed one of them was—save for the occasional turning round of the head in that mechanical way affected by owls, for they are watchful, as all wood creatures have need to be.

"Why didst thou tarry so long, my brave?" she finally murmured, as she fondly toyed with the soft mottled feathers on his broad breast.

He lifted his feathery horns angrily at the remembrance. "The blue terror caught sight of me as I looked forth from the beautiful dark home in the dead oak tree which I have selected for thee, my beloved. It was just as the gaudy daylight was giving way to the pleasing blackness of night that I came forth, thinking all the little day flyers would have been asleep, but a belated bluejay saw me and, with lifted crest and shrill voice, raised the hue and cry. The robin left his mud daubed nest in the orchard across the road, the titmouse from his home in the knot hole of the rail fence, the nuthatch, the butcher bird and hosts of others all came, with piercing scoldings, sharp pecks and fluttering wings. I might have gone back into the darkness of our new home and so saved myself further annoyance, but, light of the world," as he rolled his eyes fondly toward her, "I wanted not the blue terror to know where thou wouldst lay thine eggs—he is an egg thief, himself, thou knowest—so I sailed away into the open, and, O, the clamor they raised. And see," showing two or three broken feathers, "what the bold blue terror has done, the strong voiced and strong winged bluejay."

"How I wish I had been there," muttered the lady owl vengefully through her clenched beak. "I would have torn his blue crest from his wicked little head."

"And I would have taken his head along with it, at least as far as that black necklace of which he is so proud, if he had but given me the chance," laughed the owl grimly. "It's my usual way, only there were so many of the light, active little things that when I turned toward one another would come at me from the other side, so that my only safety from annoyance—for that was all they

could do—was in my swift and silent wings.

"It seemed," he went on, his great eyes blazing at the recollection, "as if all the birds in the woods joined the mob, friend and foe flying wing to wing, the most innocent seed bird and the bloodiest thief fighting side by side, and I had to buffet them with wing and claw, though they kept beyond reach of my beak," he added proudly, and he passed his great feather-clad claw caressingly down his polished black beak, curved like a scimitar, and as strong and sharp.

"Thou knowest, my beautiful one," he continued, "how the bluejay and the woodpecker fight one another, but to-night they joined forces as if they had been friends from the dawning of creation; and when the butcher bird cried out, 'He ate three of my children yesterday,' the titmouse—forgetting the thorn on which that same butcher bird impaled her first husband in the early summer—replied in fullest smypathy, 'And he stole one of my lovely eggs only a week ago,' and then she screamed with all her tiny might and flew at my head as boldly as if she had been an eagle. The little pests!"

"Never mind, my hero," murmured the lady owl as fondly as a coo dove, "a man has his mosquitoes, a dog has his fleas, there is a horsefly for the horse, and these little birds are our mosquitoes, our fleas and our flies. Who-who-who," she stammered in her rhetorical flight; "who has not his troubles in this world?"

"Who-who-who," echoed the owl.

S. E. McKee.

TO A NUTHATCH.

Shrewd little hunter of woods all gray,
Whom I meet on my walk of a winter day,
You're busy inspecting each cranny and hole
In the ragged bark of yon hickory bole;
You intent on your task, and I on the law
Of your wonderful head and gymnastic claw!

The woodpecker well may despair of this feat—
Only the fly with you can compete!
So much is clear; but I fain would know
How you can so reckless and fearless go,
Head upward, head downward, all one to you,
Zenith and nadir the same to your view?

—Edith Thomas.

THE BROWN-HEADED NUTHATCH.

(*Sitta pusilla.*)

Come, busy nuthatch, with your awl,
But never mind your notes,
Unless you've dropped your nasal chords
And tuned your husky throats.

—Ella Gilbert Ives, "Robin's Thanksgiving Proclamation."

Of the twenty species of nuthatches known to inhabit the temperate regions of the Northern hemisphere, but four are distinctively American. They are classed by ornithologists with the tits and chickadees in the family Paridæ, a word derived from the Latin parus, meaning a titmouse. The nuthatches, like the woodpeckers, are climbers, but unlike the latter they climb downward as well as upward and with equal facility. Their tails are very short and are not used for support. Their bodies also do not touch the tree "unless they are suddenly affrighted, when they crouch and look, with their beaks extended, much like a knot with a broken twig to it." A sudden clapping of the hands or a sharply spoken word will often cause a nuthatch to assume this attitude. They are busy birds, yet they are seldom too absorbed in their work of gathering food to stop and closely scrutinize an intruder. "Few birds are easier to identify: the woodpecker pecks, the chickadee calls 'chickadee,' while the nuthatch, running up and down the tree trunks, assumes attitudes no bird outside of his family would think of attempting."

They do not always seek their food in the crevices of the bark of trees but, flycatcher-like, will fly outward from their perch and catch insects on the wing. Mr. James Newton Baskett relates the following interesting observation: "One spring day some little gnats were engaged in their little crazy love waltzes in the air, forming little whirling clouds, and the birds left off bark-probing and began capturing insects on the wing. They were awkward about it with their short wings and had to alight frequently to rest. I went out to them and so absorbed were they that they allowed me to approach within a yard of a limb that they came to rest upon, where they would sit and pant till they caught their breath, when they went at it again. They seemed to revel in a new diet and a new exercise."

The Brown-headed Nuthatch is abundant from Louisiana and Florida to the southern part of Maryland. It also strays, at times, farther north, for it has been taken in Illinois, Michigan and Ohio. In the pine woods of the Southern States it passes a happy existence, always chattering in bird language even when its head is downward. "Each one chatters away without paying the slightest attention to what his companions are saying." Mr. Chapman says: "There is such a lack of sentiment in the nuthatch's character, he seems so matter-of-fact in all his ways, that it is difficult to imagine him indulging in anything like a song." Though these words have reference to another species, they apply equally well to the Brown-headed form, whose only note seems to be a monotonous and oft-repeated utterance of a single syllable.

For its nest it selects a suitable hole in the trunk of a tree, or in a stump, that is usually not far from the ground. This it lines with grasses, fine, soft fibers and feathers. Here are laid about six creamy white eggs that are spotted with a brownish color. The parents are attentive to their young and seldom associate with others of their kind till these family cares are finished. Then they become more sociable and are found in companionship not only with other Brown-heads but also with woodpeckers, warblers and chickadees.

FROM COL. CHI. ACAD. SCIENCES.

459

BROWN-HEADED NUTHATCH.
(Sitta pusilla.)
Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

MY RED-HEADED NEIGHBORS.

I.

For five years, with each returning spring, a pair of red-headed woodpeckers has come, to make their nest and rear their brood of young near my cabin door. It was on a cold drizzly day the last of April, when I first observed my new neighbor. He was closely watching me as he dodged about the trunk of a dead tree standing in the yard.

Unmindful of the falling rain, he put in the day pecking and pounding away, seemingly in search of food, occasionally flying away or hitching around the tree as some one passed, returning to his quest as soon as the coast was clear.

Not until the next morning on awaking and hearing my neighbor industriously hammering away, did I suspect he was making a nest, having selected a place on the trunk of the tree about ten feet from the ground, and facing the noon-day sun. He proved to be no stickler for time, working early and late with short intermissions, when he would dart out into the air and stop some passing insect that was quickly disposed of. At the end of two weeks the nest had been completed and on the same day the female arrived. Was it a coincidence? It would seem so, for each succeeding year the male preceded his mate by a fortnight, in which time the place was selected and the new home made ready in which there was no straw, no feathers, nothing but the deep cavernous pocket, clean and fresh, perfumed with the pungent odor of decaying wood.

As the days went by they came to be less afraid of and more neighborly with me, paying little or no attention to my passing or repassing.

After repeatedly testing every available object in the vicinity of the nest, the male finally selected as his drumming place the roof-board of the cabin, where in lieu of song, he beat off many a short strain, like the roll of a snare drum, that was intended for and easily heard by his mate as she kept warm the eggs in the nest near by.

In the matter of incubating each took part, though the female devotes by far the more time, usually remaining on the nest from one to two hours, when the old man would spell her for about twenty minutes, in which time she makes her toilet and indulges her insectivorous appetite. At the end of two weeks they carried out of the nest and dropped, as they flew across the yard, the broken fragments of shell. Now the greatest of all mysteries has taken place. Like some beautiful creation of art that is to be, but as yet is an unexpressed thought in some human brain, so the bird within the egg is but a thought till, warmed by the parent's soft downy breast, the life lines throb and pulsate till the swelling life within bursts the shell. Now instead of eggs requiring warmth the old birds have two hungry mouths demanding food, that keeps them busy. Yet they knew it, knew it all from the very first; every act was intelligent, not instinctive. During the first days of the baby birds, much care was given to the preparation of their food; the legs, wings and antennae were removed from each bug or beetle. On some dead limb convenient to the nest, a small hole the size of a lady's thimble had been prepared, and into this improvised mortar the body of the insect was placed and pounded to a pulp before feeding. This care was not long continued, as the young birds were soon capable of eating whatever is given them.

The next ten days were full of business for my neighbors. Throughout the days they were constantly in pursuit of the passing life that filled the air. Each catch was quickly delivered to the baby birds, whose appetite seemed never to be satisfied.

The young birds quickly grew to be

squabs, and their bodies were covered with a downy coat resembling fur more than feathers. Soon came the last week in the home before their formal "coming out." Feathers quickly took the place of down; the rapid feeding was greatly lessened, to which the baby birds made constant complaint in a whimpering cry as they peeked out of the nest into the big world where so soon they were to be launched on their first flight, never to return to the nest.

II.

It was about the tenth of May of the following spring when my red-headed neighbor returned from his southern trip, where he had spent the winter. He was soon hard at work and had the lawn sprinkled with his white chips about the root of a pine stub, as he burrowed into the wood a few feet above, where he was making a new nest, the spot having been selected during the past summer. Here, at that time, he had done some preliminary work in the way of a prospect hole, evidently with the view of returning.

With a quick hammer-like stroke of the head, he drove his sharp polished beak into the decaying wood, rapidly repeating the strokes till the pulpy fiber was broken down and then with a mouthful of the loosened fragments, he hitched back out of the entrance, flinging the chips to the wind.

After a quick survey of the surrounding and a peek around the tree to see if there was any approaching danger, he dove into the hole again to make further excavations, soon returning, tail first, with another mouthful of refuse. After several days' work on the new nest, he came in contact with the hard resinous heart of a knot that he was unable to remove. To get by this obstruction and still be able to utilize the work done, he changed the entrance from a circle to an ellipse by extending it downward. This bit of strategy worked well in getting by the difficulty, but it proved to be only temporary.

The nest was completed in the allotted two weeks and the female came on time. After a very warm greeting she was shown the nest for her approval; but on sight of the new-fangled entrance, she halted, showing her disapproval in many ways. To overcome her objections, the old man went in and out as a demonstration; then hopping close up to her side, he talked in a low voice, making many gestures with his head, sometimes picking at the tree in an absent-minded way, as a man thoughtlessly whittles while pleading his cause. Seeing that she did not readily assent, he went in and out three or four times in rapid succession; then sidling up to her again began his persuasive chatter, but all to no purpose; she gave a decided answer and flew away.

After a little hesitation he followed her. In about an hour they came back. After some maneuvering about the yard he got her back to the nest, but not in it. He tried in every way, but no amount of coaxing could induce her to go in, and refusing to listen longer to his argument, she again flew away. Now he was disconsolate, flying away, then returning to go in and take another look at the nest, then flying to the housetop to pout. Yes, pout, for at all other times he would drum and make a great deal of noise; now, he was sulky and silent.

Next morning they came back, when, if possible, he tried harder than ever to get her to inspect the nest, but without success. She was obdurate, and, after sitting quiet until he was through his demonstrations and chatter, she flew away over the fields, uttering a loud cry as she left him sticking to the side of the tree. He sat still a few moments, seemingly in a brown study, then he began hopping about the trunk of the tree, where in a short time he had selected a place and gone to work with a will in making a new nest, that was completed in a little more than eight days. Very little was seen of the female during the completion of the new home. She was in the yard a few times, but never near the tree where the male was at work.

He had made no mistake this time, the entrance was round and clean cut as an augur hole. When the madam was escorted to the new nest there was no hesitation about inspecting it; she entered at once. Coming out a moment later, she made it known that the nest was satisfactory. Then the old man was jubilant, expressing it by voice and action. From

this moment domestic affairs went on as usual and the family jar was forgotten, so far as an outsider could observe.

Eggs, baby birds, busy days, fall and southern journey, ended this year with my pleasant summer neighbor.

III.

Many times during the following winter they were the subject of my thoughts. I wondered where they were and whether they would return. Yes, early one morning of the next spring I was awakened by his beating a reveille in the same old place on the roof-board of the cabin. With little delay he selected a place for the new home. Then followed a fortnight of hard work and vigilance when the excavation was completed and only awaited the coming of his better half, who was as prompt in her arrival.

There are families to raise; there are thousands of flies, bugs and beetles to catch, for which they are never given credit, but let them take a berry and it is "Johnnie, get your gun." Early one bright morning in July there was noise and bustle about the woodpecker home. It was not difficult to guess what was going to take place. The parents were close by the nest on the side of the tree. The little birds had crowded out of the entrance, eager for their first flight, which, like the first tottering steps of a baby, is attended with much chatter and nonsense that is not understood.

The mother set an example by flying to a tree some fifty feet distant. The little birds followed with a labored effort and, striking the tree with a thud near the ground, managed to stick fast. Now began their arboreal life of tree climbing at which they were awkward at first and had many falls. The young birds were a soft smoky gray. There was no sign as yet of the cardinal cap and white bodice with black chevrons, which would make them so conspicuous during the next year.

In their daily visits to the yard each parent chaperoned one of the baby birds, teaching it all the tricks in the woodpecker trade, as they conducted it from tree to tree where they searched amid the bark and worm holes for morsels of food that had been secreted there.

One day late in October they failed to return; this ended another year and brought another separation.

IV.

As promptly as ever the following spring found my summer tourists in their old haunts, each year getting a little closer if possible to the cabin with their nest.

Household affairs went along smoothly till one day the old man was keeping house while the madam had gone out for lunch. At the expiration of about twenty minutes he came out of the nest. As he flew away he gave a loud call that on former occasions had invariably brought his mate to take charge of the nest, but to this call she did not answer. She never returned. He waited a few moments, calling for her, then returned to the nest. Ten minutes later he came out again, repeating the call several times as he flew from tree to house and back again to the nest, about which he showed much concern. Five minutes more and for the third time he left the nest, flying down in the orchard where the female often went for food. Soon returning he went direct to the nest, seeming to understand that some misfortune had overtaken his mate.

Like Mark Tapley, when the occasion demanded he came out strong, for with scarcely an intermission he stuck to the nest for the next three days. Then he carried out the broken shells and began bringing food for two mouths that were always agape. With a desire to assist him I daily placed bits of food on a certain stump in the yard. He soon came to understand the meaning of my visits and to regard these tit-bits as belonging to himself. He would fly to the house top and watch me put out the food. As soon as I turned away he would drop off the roof, spread his wings, slide down on the air with a long graceful sweep, bringing up on the edge of the stump.

Nodding and chattering, he hitched around the stump, tasting each bit of food, eating what he liked, but rarely giving any of this food to the babies. No matter whether he ate it or not, no other bird was permitted to trespass.

The undivided care of the family left little time for personal attention. He looked shabby and forlorn by the time

the young birds were old enough to quit the nest and seek their own food. Then he spent much time in mending his appearance.

Each passing year my attachment had grown for my summer visitors. The thought that he might never return, owing to the loss of his mate, worried me.

The summer passed; the days grew short and the night grew frosty. The blackbird family would soon be on their way to the sunny south, and I should miss their familiar voices and many cunning pranks about the yard.

V.

Early one May morning the next spring I was greatly pleased to hear the well remembered call. I knew my old-time friend had come to spend his summer sojourn in the yard amid the scenes of former years.

He flitted about the yard in his old familiar way, tapping off his short quick rattle on the roof-board which reverberated through the cabin.

He was happy again. Why not? He had brought with him a new bride. She was afraid of me. He showed her by example that I would not hurt them, but on sight of me she slipped around the stumps and trees, and at the least approach flew away.

William Harrison Lewis.

BEAUTIFUL SNOW.

Beautiful snowflakes are softly falling
Like down from an angel's wings,
Beautiful snowflakes are softly falling
While the snow bird merrily sings.

Beautiful snowflakes are softly falling,
From the clouds they come whirling down,
Like the dust from the floor of a crystal palace,
And cover the frozen ground.

Beautiful snowflakes are softly falling,
Covering the ground with white;
The flowers of summer have withered and faded,
The robin has taken his flight.

Beautiful snowflakes are softly falling,
They bring joy to young and old;
Beautiful snowflakes are watching and waiting
For the Christmas chimes to toll.

Beautiful snowflakes are softly falling
Like down from an angel's wings,
Beautiful snowflakes are softly falling
While the snow bird merrily sings.

—J. Frank Richman.

FROM COL. CHI. ACAD. SCIENCES

460

SHARP-SHINNED HAWK.
(Accipiter velox.)
⅛ Life-size.

COPYRIGHT 1900, BY A. W. MUMFORD, CHICAGO.

THE SHARP-SHINNED HAWK.

(*Accipter velox.*)

The Sharp-shinned Hawk is a hardy and courageous bird with an extended range, covering North America as far south as Panama. Unlike the larger number of birds, it breeds throughout its range, even as far north as the Arctic circle. In the fall months it passes over the middle states in large numbers. One writer says that he observed several hundred during a single day's tramp, the majority flying very high in the air. In the spring, usually in March and April, the same scene is repeated during their northward flight.

Much of the bad repute in which the hawks are held is due to the depredations of the Sharp-shinned and its sister species the Cooper's and goshhawks. All these feed, to a great extent, upon the smaller birds, grouse and poultry. The smaller mammals, such as the troublesome field rodents, form a much smaller proportion of their food than is the case with the other hawks.

Dr. A. K. Fisher, speaking of the Sharp-shin, says: "Little can be said in favor of this hawk, although its daring, courage and impudence are to be admired. A score of valuable species suffer because they belong to a class which includes two or three noxious kinds. However, like most villains, it has at least one redeeming quality, and that is its fondness for the English sparrow, our imported bird nuisance. This Hawk is gradually learning that there is a never-failing supply of food for it in the larger towns and cities, and it is not uncommon in Central Park, New York, all through the winter, where the writer has witnessed it chasing sparrows."

The Sharp-shinned Hawk is brave and full of dash and spirit. It does not hesitate to attack birds fully as large as itself and in one instance it was known to strike down a night heron, which obtained its liberty only because its discordant squawks so disconcerted its ordinarily cool and collected enemy that it was frightened away. Even though its wings are short and seemingly not fitted for rapid progress, its flight, when in the pursuit of prey, is very swift and direct. "No matter which way the selected victim may turn and double, his untiring pursuer is equally prompt, and only rarely will it miss capturing its quarry. Once struck, death fortunately follows quickly, as it fairly transfixes its victim's vitals with its long and sharp talons."

Audubon well describes the habits of this bird. He says: "While in search of prey, the Sharp-shinned Hawk passes over the country, now at a moderate height, now so close over the land, in so swift a manner that, although your eye has marked it, you feel surprised that the very next moment it has dashed off and is far away. In fact, it is usually seen when least expected and almost always but for a few moments, unless when it has procured some prey and is engaged in feeding upon it. The kind of vacillation or wavering with which it moves through the air appears perfectly adapted to its wants; for it undoubtedly enables this little warrior to watch and to see at a single quick glance of its keen eyes every object, whether to the right or to the left, as it pursues its course. It advances by sudden dashes, as if impetuosity of movement were essential to its nature, and pounces upon and strikes such objects as best suit its appetite, but so very suddenly that it appears quite hopeless for any of them to try to escape."

The nest of this species is usually built in dense hemlock or other cone-bearing trees, though a deciduous tree is sometimes selected. It prefers also a site not more than twenty to forty feet from the ground. It is said that the nest is sometimes built in the crevices of cliffs or in hollow trees. This may be the case in Arctic regions, but it is not the usual habit of the bird within the borders of the United States. The nests are very

large, as compared with the size of the bird, varying in diameter from twenty to thirty inches, outside measurement. The walls are usually constructed with twigs and lined with smaller ones and strips of the fibrous inner bark of coniferous trees. Instances have been reported in which the walls were nearly eight inches in thickness.

As a rule the Sharp-shinned Hawk does not defend its nest from the attack of intruders. There are, however, a few instances recorded in which both the male and female birds fought a person who was climbing to their nest, by repeatedly striking at the intruder.

As befits a bird that possesses such a character as that of the Sharp-shinned Hawk, it is practically a voiceless bird and seldom utters a sound except when its nest is approached. At such times its cries have been described as like those of a flicker.

BIRDS ON THE WING.

In a picturesque little hill-town in eastern Massachusetts, where I was spending the summer, I had opportunities for studying birds, their language, and their customs. I shall not soon forget a remarkable sight in the heavens on the evening of August 26. I was suddenly attracted by an unusual twittering and calling of the birds, and, on looking out of a window, I saw a multitude of birds of various sizes, from the tiniest of hare-birds, or sparrows, to birds as large as robins, flying in all directions and filling the air, it seemed, with their songs and their soft little notes. Ah, I thought, the birds are having a gala day, a picnic, or a ball, or perhaps a regatta. They were sailing, soaring, whirling, diving, dipping, in intricate mazes, yet with a certain method that was both bewildering and charming. Perhaps they were trying their wings for their southern journey; perhaps they were merely taking a twilight constitutional en masse. The hour was a little past six o'clock. The southern sky was pale blue, overspread with soft, translucent clouds of opaline hues, paling and flushing—a most fascinating picture of itself, and a fine background for the bird parade. All around great trees rose in billowy masses of emerald green, maples and elms predominating; while, standing like tall sentinels, two giant Lombardy poplars rose above them all, looking straight up to the heavens. In pauses of the dance the birds seemed to sink into these bowers of green, and for a few moments no bird was seen. Then, from somewhere, one came sailing through the air, then two, then three, with little notes of command, as when the leader of an orchestra with his baton begins the overture, and then a general rush of wings and the whirling and wheeling and dipping and darting was again in full play.

This display of bird maneuvring continued for about half an hour. I viewed it from a doorway where I could command the whole scene, which was enchanting and something which I had never before seen.

I have not the presumption to suppose that it was a field-day review gotten up for my especial benefit; yet I enjoyed it quite as much as if it were.

It is possible that they were swallows out on a foraging expedition, for the day before a shower of small, green flies swept through the air, lighting here and there and everywhere within its radius. Perhaps the birds had discovered a school of these flies in the air and took sudden advantage of the aerial sporting grounds. Whatever may have been the occasion, I wonder if such bird parades are often seen.

M. D. TOLMAN.

A SUNSET CLUB.

The mere idea of another club may be unwelcome in these days of many clubs, yet I am so bold as to desire the existence of a new one; and I would urge all who can, to become members of it as soon as possible.

Unlike most clubs, it will have no officers, nor any rules and regulations; neither will there be initiation fees nor dues to pay.

The object of the club will be the study of art, as it is displayed in Nature's studio; and the only requisites for membership are a love of beauty and a few minutes' time each day. The club will be in session every day at sunset, and all members are urged to be present at any place where they can command a view of the western sky. They will thus be enabled to study the latest picture from the brush of that master artist, Nature.

No art gallery on earth can afford its visitors such a succession of masterpieces as will be open to the view of all members of this club. There is no artist so resourceful, none capable of giving such an endless variety of colors and effects as Nature.

To attempt to describe the beauties that are daily set before us would be vain; for who can adequately express in words the marvels of a sunset sky? No mere words, however carefully chosen and accurately used, can convey to the mind its unspeakable glories. These must reach us through our eyes, those "windows of the soul." Shall it be said of us that we "have eyes and see not"?

This evening the sun went down in a blaze of orange fire, deep and transparent, and a few minutes after the great ball had dropped below the horizon, the orange glow at the base melted into pale green above, then clear yellow and delicate pink, with infinite graduations of exquisite shading. Words fail, and leave me helpless before such a masterpiece I can only hope that many other people were enjoying it with me, as its beauties stirred my inmost soul.

Some days ago the sun's setting was followed by one great expanse of deep orange red from the horizon up to a bank of cloud which hung like a gray curtain, slightly raised, across the western sky. Another day the afterglow was an inimitable, transparent lemon-yellow, across which were stretched two horizontal bars of rose-colored cloud. In the foreground of these pictures are the beautiful trees, which, having now laid aside their leafy robes, appear in their loveliness and diversity of outline. A good opera glass is a great aid to the fuller enjoyment of the pictures, as it brings out the perspective more clearly, and deepens and intensifies the colors.

When a day has been clouded and dull, some may think it not worth while to attend the meeting of the Sunset Club. But they are mistaken. Who that admires a beautiful picture in black and white—a fine engraving—can fail to see the beauty of this sunset picture; this living picture in half tones, which is so superior, so much more perfect in every detail than the work of man? Nay, never miss a meeting if you can possibly be present: never fear that you will fail to find beauty there if you look for it.

Let us not complain if we cannot possess works of art wrought by human brains and hands, when we often fail even to look at, much less appreciate, the daily art of Nature which is our birthright, and which perhaps we regard but lightly, because it is free to everyone with seeing eyes and beauty-loving soul. Let us rather cast off the scales that blind our eyes and hide from us the visible expression of a Creator's love, the beauty of Nature.

And our lives shall be enriched an hundred fold.

ANNE WAKELY JACKSON.

QUARTZ.

This is the most abundant, most durable and most indestructible of common minerals. There is scarcely a sand beach, field or mountain side upon which this mineral cannot be found in some form or other. Its abundance is due not so much to its excess in quantity in the underlying rocks as to the fact that, being harder and less easily decomposed than other minerals, it remains after they are worn away.

Though so common, it appears in so great a variety of colors and different kinds of structure that a large collection of minerals *looking* very much unlike might all be made up of Quartz. If they were all of Quartz they would have the following characteristics: Hardness, 7 (cannot be scratched with a knife blade); specific gravity, two and a half times as heavy as water; no cleavage; fracture conchoidal (shell-like); infusible before the blowpipe; insoluble in common acids. The numerous varieties of Quartz can be grouped into two classes, the pheno-crystalline (plainly crystalline) and the crypto-crystalline (obscurely crystalline). This article deals with the plainly crystalline varieties. These include, among other varieties, rock crystal, amethyst, rose quartz, smoky quartz, and sagenitic quartz. These varieties all occur in well formed crystals, and all have a vitreous luster, i. e., luster like that of glass. The differences between them are almost exclusively differences of color.

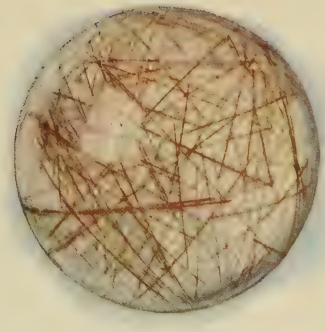
Rock Crystal—This is quartz in its purest form. Typical rock crystal is perfectly transparent and colorless, but the mineral is often more or less clouded and opaque. By the ancients it was supposed to be petrified ice, and hence the Greeks applied to it their word for ice, from which we get our word crystal. The belief in its ice origin survived to a comparatively late period, for in 1676 Robert Boyle opposed the idea, stating that the quartz could not be ice, first because it was two and a half times as heavy as water, and second because it was found in tropical countries. The belief of the ancients probably came largely from the fact that the quartz they knew was obtained from the peaks of the Alps. They reasoned that it was ice that was frozen so hard that it would never melt. Fortunately our present knowledge of chemistry prevents us from any longer confounding the two substances, for we know Quartz is oxide of silicon while water is oxide of hydrogen.

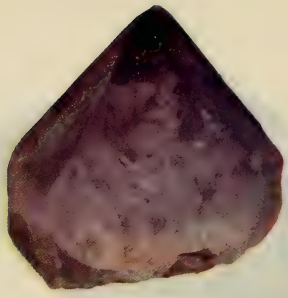
Quartz in the form of rock crystal occurs in all parts of the globe, and for the most part in well-formed crystals. These crystals are usually six-sided, and usually have the form of a prism capped by a pyramid. Hot Springs, Arkansas, and Little Falls, New York, are the best known localities in our own country for this form of crystallized quartz. The Little Falls crystals are exceptionally brilliant and well formed. From this locality and others the material, cut or uncut, is often known as diamonds, and sold as such. Such stones can, of course, be easily distinguished from true diamond, for while they will scratch glass, their hardness is much below that of the king of gems and they utterly lack the internal fire of the latter.

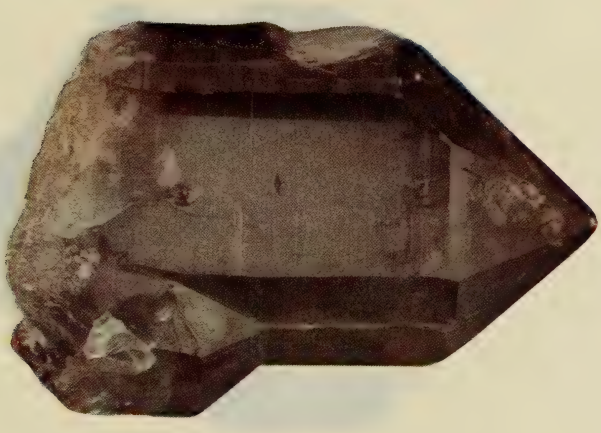
Rock crystal occurring in large, clear masses is often cut into ornamental and useful objects such as seals and paperweights, and especially into balls. The latter industry flourishes especially in Japan, and perfectly clear quartz balls six inches in diameter are made there.

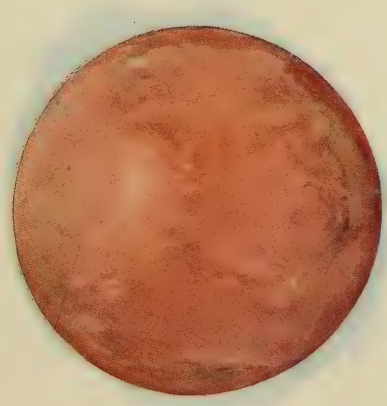
Rock crystal is also used extensively to cut into eyeglasses and spectacles in place of glass, some considering it less detrimental to the eyes than glass. It is also occasionally used for mirrors, it being superior to glass for this purpose, in that it does not detract from the rosiness of the complexion.

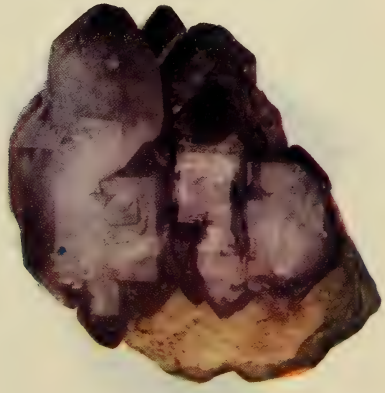
Among the ancients rock crystal was much more highly prized than among us, as it answered them many of the purposes for which we now find glass more suitable and cheaper. Wine glasses were made from it, though of course at great cost, a thousand dollars being considered a small price for one. Lenses of rock crys-











LOANED BY FOOTE MINERAL CO.

QUARTZ (crystalline.)

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

Rutilated Quartz, polished (Brazil.)
Rose Quartz (Black Hills.)

Smoky Quartz (Switzerland.)

Amethyst (Virginia.)
Amethyst (Montana.)

tal were used to concentrate the rays of the sun for cauterizing wounds and also to light fires, especially sacrificial ones. Roman ladies were also accustomed to carry balls of rock crystal in their hands in summer for the sake of the coolness they afforded. The ladies of Japan are said to do the same at the present day.

The stone was in former times often stained different colors, and thus all sorts of imitation gems were produced. The modern method of making doublets has now superseded this art.

Amethyst.—This is the name given to the violet or purple varieties of crystallized quartz. The color has often been supposed to be due to small quantities of oxide of manganese, but is more probably the result of a content of organic matter, as the color can usually be mostly burned out by heating the stone. By partial heating the color is changed to yellow, and much so-called citrine is simply burned amethyst.

Quartz having in a general way the amethystine color is comparatively common, but for gem purposes only that transparent and of good color is available.

Important localities for gem amethysts are Southern Brazil, the Ural Mountains, Ceylon, and occasional finds in the States of Maine, North Carolina, Pennsylvania and Montana in our own country.

Very commonly where crystallized quartz occurs, crystals of an amethystine hue are to be found, so that to enumerate localities of the mineral would be a considerable task. Good cut amethysts command a fair price, though they are much less valuable than formerly. Three or four dollars a carat is a fair price at the present time. At the beginning of this century Queen Charlotte of England is known to have paid $10,000 for an amethyst for which $500 could now hardly be realized. One reason for the greater esteem in which amethyst was formerly held is probably the virtue ascribed to it of shielding its wearer from the effects of drinking too much wine. Its name is derived from two Greek words, meaning "not to inebriate." The drinking cups of the Romans were often made of it, partly for the above reason and partly on account of their belief that any poison placed in such a cup would be rendered harmless. Amethyst is the "birth stone" of the month of February, and St. Valentine is said always to have worn an amethyst.

> "The February born shall find
> Sincerity and peace of mind,
> Freedom from passion and from care
> If they an amethyst will wear."

Rose Quartz.—This form of quartz, the color of which is indicated by its name, is rarely of sufficient transparency to be prized as a gem. Cut, however, into various ornaments, it makes objects of considerable beauty. Its luster, instead of being glassy like that of other forms of quartz, is nearly always more or less greasy. The ingredient which gives its color is not known. It is probably some organic matter, since the color disappears on heating and, unfortunately for the extended use of the stone, fades considerably on exposure to light. There are numerous localities whence rose quartz of good color may be obtained, although it is not of so common occurrence as most other varieties of quartz. The best rose quartz in this country comes from Oxford County, Maine, and the Black Hills. Foreign localities are the Urals, Brazil and Ceylon.

Smoky Quartz. — This variety of quartz is often known as "smoky topaz," a misleading term, since the mineral is not topaz at all. As its name implies, its color is like that of smoked glass, all gradations occurring between a mere tinge to color so dark as to render the mineral practically opaque. The color often varies considerably in the same crystal, being darker and lighter in spots. The coloring matter is undoubtedly carbonaceous and organic in nature, for when a crystal is heated it gives off a smell of burning organic matter, and by heating for some length of time the coloring may be entirely burned out. At an intermediate stage in such heating the color becomes brown or yellow, and stones of this color are often cut as gems and known by the name of "Spanish topaz" or "citrine." True citrine is, however, transparent quartz with a natural yellow color. The most remarkable crystals of smoky quartz known are some that were found in 1868 in a hollow in granite in a locality in the Canton Uri,

Switzerland. About 3,000 pounds of well formed crystals were there found, the largest and best of which are preserved in the Berne Museum. They are so unique that special names have been given them. One about two and one-half feet long, and weighing nearly four hundred pounds, is known as the "Grandfather"; another, somewhat smaller, but more perfect in form, as the "King," and two of nearly equal size, weighing about one hundred and forty pounds each, are called "Castor and Pollux." The smaller crystals obtained from this and neighboring regions in the Alps are for the most part of great perfection of form and color. Aside from these localities in the Alps, the most remarkable crystals of smoky quartz come from the region of Pike's Peak, in our own country. While not reaching the size of the Alpine crystals, they are often perfect in form and color, and gems to the value of thousands of dollars are annually cut from the supply there obtained. Alexander County, North Carolina, also furnishes many crystals. Smoky quartz may be called the national stone of Scotland, the name by which it is known being "Cairngorm stone," from the locality where the best crystals are obtained.

Sagenitic Quartz.—This form of quartz, also known as "sagenite," "fleche d'amour" (love's arrow), "Venus' hair stone," and, if the included mineral be rutile, "rutilated quartz," is rock crystal containing inclusions of other minerals in hair-like or thread-like forms. Of the minerals so included, rutile is the most common, but tourmaline, hornblende, epidote and others occur. These minerals are formed in the quartz doubtless by crystallizing simultaneously with that mineral, or "host," as it is called. The arrangement often gives a stone of great beauty, especially when the rutile is more or less transparent and has a blood red color. The Japanese frequently polish the surfaces of such crystals of quartz to make the interior structure better visible. Specimens are also obtained from Madagascar, Brazil, and North Carolina in our own country. When the fibers of the included mineral are smaller and more abundant, the forms of quartz known as "cat's eye" and "tiger eye" are produced. The reflection of light from the surfaces of the fibers gives the glittering effect known as chatoyancy. Nearly all the "tiger eye" in use at the present time comes from South Africa; the cat's eye from Bohemia and Ceylon.

OLIVER CUMMINGS FARRINGTON.

EVENING IN THE CANYON.

The sun's last beams kiss the mountain side,
At which it blushes like a bride;
A soft wave, from the earth's warm breast,
Stirs in the pines and sinks to rest.
Far off a straying lambkin bleats,
Which pitying Echo soft repeats;
Anear the querulous, strident cries
That tell of insect lullabies.
Then long, grey shadows take command
And beckon with mysterious hand
Till falls a deep, expectant hush,
And then the song of a single thrush.
The flowers and grasses bow the head,
Like children when their prayer is said,
While I with heart and soul rejoice
That a perfect day hath found its voice.

—M. E. Dissette.

BERRIES OF THE WOODS.

There are no flowers to make the earth gay in winter, but the berries, vivid, scarlet, like a note of exclamation or emphasis, light up the somber browns and grays of the woods and marshes. Jack-in-the-pulpit now shows a brilliant cluster, the Uncle Spadix completely hidden by the flaming berries. It is as if Jack had forsaken his pulpit altogether and turned to a rollicking life in the world. We know quite well without seeing the birds feed on any special variety of berry that they like them, for in the economy of thrifty Dame Nature these vivid colors of the outer cases are signals—calls to a feast, with the prudent condition that thus the seeds shall be carried abroad.

Holly stands at the head of all the berry tribe, royal by virtue not only of its shining clusters of fruit, but its glossy leaves, deep cut on the edges, that keep their beauty so long. It is usually a shrub, but in the mountains where the conditions are favorable it towers aloft as a tree. Another less famous, yet admirable member of the Ilex family with red berries whirled most gracefully around its stem, is the winterberry or black alder. Its foliage is less beautiful than that of the holly, but its berries are as brilliant. There are different splendors for North and South. In the North, when the white frosts fall the prickly barberry bushes are already loaded with their tart scarlet berries, and the old fences are rich with the fruit of the choke cherry. In the damp places of Southern woods the spice berries of the Laurel family are shining in small clusters. You are drawn by another sense in this case, for the berries are not only pleasing to the eye; they have also a delightfully pungent fragrance, especially when the scarlet skin is broken, and shows the yellow pulp inside.

The staff-tree, shrubby bitter-sweet or strawberry tree—for it has many names—glows with its odd-looking fruit, consisting of a scarlet aril and orange-tinted, or crimson pods or seeds. The aril plays a different part in various plants, though it is always a seed-covering; in the water-lily it is the transparent seed-bag, in the nutmeg it is the mace, in the twining strawberry bush it is a pulpy scarlet case; in the shrub it looks rather like a red chestnut burr, split wide open to show its gay seeds. There is a low shrub whose dark purplish red berries are arranged gracefully along its slender stems, called the snow or coral berry. The latter name suggests a far brighter color than the berries possess, for they are rarely noticeable until the winter snows have turned the earth white and by contrast made them attractive. This belongs to the Honeysuckle family and grows abundantly beside roads and in fence corners. Most of the honeysuckles bear berries; the local honeysuckle is almost as brilliant in the season of fruit as when it blooms, but the Chinese and Japanese honeysuckles have berries of glossy black, easily seen by the birds. The haw and the tupelo also bear black berries, and it is a pretty sight to see the flowers of gay yellow and the black sapsuckers just arrived from the North, rejoicing over the feast of the purple-black clusters of the tupelo. Other birds also love them and the trees are crowded till the migration is over.

The pale blue adar berries are as fragrant as they are pretty, thickly clustered in the prickly boughs. The mistletoe (Trees-thief as its Greek name means) grows upon our great oaks, hanging sprays of pearly or clouded opaline berries among its strange, thick, yellowish leaves. It is not the English mistletoe of Christmas stories which grows upon fir-trees in preference to all others, but is of similar habit.

ELLA F. MOSBY.

EARLY RECOLLECTIONS OF NATURAL OBJECTS.

In the inanimate world the things which most strongly impressed me were the many beautiful scenes of the winter season, such as the graceful drooping of the evergreens after a heavy snow fall; the thousands of domed, draped and capped objects at this time; the many beautiful designs of ferns, grasses, wheat sheaves, coral branches, etc., formed by the frost upon our windows, and the unmatchable splendor of the trees and other objects after receiving a coating of ice during a sleet storm. The lovely display of blossoms in the spring time, and the crimson leaves of autumn, also called forth expressions of joy and pleasure.

Among flowers, the wild blue violet is the first blossom that I remember having found and gathered. They were plentiful in the woods, meadows and roadsides, and we always kept one or more bunches of these and other wild flowers in the house during the spring season. Next to the blue violet, the dog-tooth violet, buttercups, spring beauties, dandelions and daisies follow in memory's train.

My mother always accompanied me on my first little rambles, and many are the pleasant strolls we took, hand in hand, gathering flowers, listening to the songs of birds and enjoying the beautiful surroundings; her training and instruction in Nature's book doubtless laid the foundation of my devotion to and study of these things in later years. Did she not call my attention to the gorgeous sunsets, to the bow of promise spanning the sky, to the squirrels and other little animals of the woods, to the rippling brook splashing over its pebbles and golden sands; did she not teach me to love God's creatures and not kill or destroy them? Happy days never to be forgotten; little friendships never broken.

BERTON MERCER.

TWO STRANGE HOMES.

The little brown wren is a bird with which most of us are familiar, as it is one of our most common birds. It builds its nest in all sorts of odd places, venturing about barns, outhouses, or even the homes of men.

One summer a ball of twine left over from the harvesting was placed upon a shelf in our tool-house. The next spring a pair of tiny wrens discovered it and selected it as a suitable nesting place. They built the coziest and softest of homes in the hole in the center of the big ball and several eggs were laid before we discovered it. It was then left to the birds who had taken possession of it and they were allowed to raise their family there in peace.

At another time a pair of wrens built their nest in the sleeve of an old coat which had been left hanging in a shed and they made what, at least to them, was quite a palatial abode in that which superior man had deemed unfit for use.

MARY MCCRAE CULTER.

GREENLAND WHALE.
(Balaena mysticetus).

COPYRIGHT 1901, BY A. W. MUMFORD, CHICAGO

THE GREENLAND WHALE.

(*Balaena mysticetus.*)

The whale is by far the largest animal on earth, some species being many times the size of an elephant, and is it not a curious fact that in appearance it so resembles a fish that many suppose it to belong to that class, while truly it is not a fish at all? It is in reality much more like a cow or a horse, although externally it seems very unlike these animals; but appearances are not always to be relied upon.

When we examine the construction of the whale we find that it is warm-blooded, as we are. We find that it has immense lungs which hold a great quantity of air and that it must fill them or die. We find that it has bones similar to those of land animals. It has the seven neck bones found in all mammals, but it is the opposite extreme from the giraffe, as in proportion to its size it has the shortest neck of any mammal, while the giraffe has the longest. It has ribs, also bones for the forearm, and, nearly obliterated, there are found bones representing the hind legs. Instead of being hatched from an egg, as most fishes are, a baby whale comes into the world alive and complete, and for many months it takes its mother's milk as a calf might do or a young colt. A baby whale is indeed a monstrous infant, being sometimes ten or twelve or even fifteeen feet long; but by its mother's side it does not seem such a monstrosity, for the whale mother may be forty-five or fifty feet in length herself.

These great animals are a most interesting study, for their ancestors undoubtedly once lived on land. We can imagine the land animal, many centuries ago, dwelling on the banks of some large stream, fond of spending much time in the water, until with successive generations the shape of the animal gradually changed and adapted itself to its fluid surroundings. The forearms and hands gradually became covered with continuous skin until the arm and hand became a flipper; the rear limbs grew shorter and shorter as they were used less and less, until finally there was nothing left to indicate their presence except a few small bones. The tail, used as a propeller, grew strong, large and flat, and we can imagine that the animals themselves, as they put out to sea and in time avoided even the rivers, became larger as the centuries passed by.

However this may be, the Greenland Whale has been found sixty feet in length, although some other species are smaller.

I think we can consider the whale an animal of a roving disposition. In early times it roved away from land, and now it belongs to the migratory animals, changing its locality with the seasons. The Greenland Whale is happiest with cold and ice, so when summer comes it travels north in great numbers. These great groups are called schools, and being of a social disposition, it is seldom found alone when traveling. At first thought it would seem strange that a warm-blooded animal with no fur to protect it could so enjoy the cold, but should we examine beneath the soft, velvety skin we would find a great layer of fat, from ten to eighteen inches thick. This protects the animal from cold like a great soft overcoat, and the polar sea has for it no terrors.

Of the peculiar make-up of the Greenland Whale the head is certainly the most peculiar of all the parts.

It is a great, shapeless mass about a third of the length of the entire animal. It seems to be out of all proportion until one realizes that it must provide food for this great creature, which is no small task. Like all of the whalebone whales, the Greenland Whale has no teeth, but in the mouth is found a great number of

flexible, bone-like appendages attached to the roof of the mouth and palate at one end and hanging loose at the opposite end. These are known as the baleen plates and form the whalebone of commerce. In the Greenland Whale this whalebone hanging from the center of the jaw is sometimes twelve feet in length, and as there are from two hundred and fifty to four hundred in number, the great value of the baleen is readily seen. When the great animal opens its mouth, a row boat with its oarsmen could easily be taken in, yet the animal eats only small crustaceans, mollusks, worms and minute forms of life.

When the immense mouth opens, it takes in a large amount of water containing its food. The mouth then closes, but the water is permitted to flow out, the baleen acting like a sieve, retaining the food supply within and allowing the water to ooze away. The food is retained on the great tongue and swallowed at leisure.

The eye of the whale is very small; the ear is barely perceptible, yet when submerged, the sight is keen and the hearing well developed. The nostrils are placed on the top of the head, so that the whale when rising can readily begin the operation of breathing. With a snorting noise the animal first blows up the water which has entered the imperfectly closed nostrils when submerged. This is done with such force that the water is separated into fine drops and thrown fifteen or eighteen feet into the air. The whale then breathes with a rapid inspiration, making a sort of moaning sound. When the lungs are filled with air, it will plunge beneath the surface of the water and remain for perhaps twenty minutes before appearing again, although when wounded it remains under water a much longer time.

In spite of its great size the whale is so perfectly adapted to its surroundings that it is a highly active animal. It swims without apparent effort and on account of the great strength of the enormous horizontal tail fin, it can jerk itself above the water and take long leaps. The smoothness of the skin facilitates the passage of the immense bulk through the water and the thick layer of fat diminishes the weight so that a whale can move with the rapidity of a steamship.

The Greenland Whale is, on the whole, an amiable animal. It seems to prefer to live at peace with its kind, and although it can make great havoc with its immense tail fin, it seemingly does so by accident rather than from viciousness.

Like all other animals the whale has its enemies, especially when young. The killer-whale and some sharks hunt and attack the young whales, as indeed they do the older ones; but the greatest enemy of all is man. For a thousand years he has systematically pursued and captured many species, until some are nearly exterminated. The Americans became great whale hunters in the nineteenth century, and in the thirty-eight years from 1835 to 1872 nearly 20,000 ships engaged in this industry. These whaling ships were fitted especially for this work. They were built to withstand the perils of the ice-bound northern seas and were arranged for long voyages. It was a sad day in the coast villages when the whalers sailed on these long, perilous and uncertain cruises, for the ships frequently were gone three years and some never came back, though as a whole the actual loss of human life was comparatively small. A number of ships would if possible keep sufficiently near together to render assistance in case of accident.

After reaching the whaling grounds usually two men were kept on the mast as a lookout. When the cry came, "There they spout!" all became excitement. As soon as it was determined that the whales were the species which they were seeking, the boats were lowered, the harpoons, the lances, the gun, the hatchet, the knife, the blubber-spade, and, most important of all, the line, were all placed in the boat together with a keg of fresh water, some ship's biscuit, the lantern, candles and matches; and in a very short time the men were lustily pulling toward the monster they hoped to capture. They endeavored to approach the whale from the rear and often were not discovered by the animal until the harpoons were buried in its body. The boat was then rowed backward with great speed, as the whale could easily annihilate it with one blow of its great tail. Frequently the whale would dive down perpendicularly to a great depth and if the line was

not sufficiently long it would of course pull the boat after it. In time the whale was obliged to rise for air and the struggle was renewed. Other boats approached and threw their harpoons, and the whale either turned upon its tormentors or ran, dragging the boats after it. In time it became exhausted and then it was killed either with the gun, harpoon or a hand lance. It was then towed to the ship's side, made fast with chains and placed to float head backwards. The blubber was then torn off by means of pulleys and tackle. This process lasted from four to eight hours. The upper jaw of the whalebone whale or the lower jaw of the sperm whale was then cut off and taken on deck. After all the valuable parts were taken the carcass was cast adrift. The blubber was then cut into pieces and tried out, the oil being stowed away in barrels. The value of the whale may be as high as $10,000.

The trying out of the oil is indeed a weird sight. At first, wood is used as a fuel, but afterward the residue of the blubber, called cracklings, is used, as it possesses sufficient heating power to finish the work. "Attired in their worst clothes," writes Pechuel-Loeschke, "half-naked, dancing and singing, running after one another and brandishing their tools, dripping with oil and sooty like devils, the crew disport themselves about the hearth. An intensely active life prevails on board. The sight of this activity is doubly striking by night when a mass of the cracklings is hoisted up in an iron basket. This strange torch burns merrily, casting a weird light on the scene as the blazing flames throw glaring, fitful rays on the deck and bring out in bold relief the black clouds of smoke and the masts with their sails, the reflection extending far out over the sea. By day huge masses of smoke on the horizon betray the presence of a whaler which 'tries out' the blubber, long before one catches sight of the ship itself."

JOHN AINSLIE.

Through the silent watches of the night
The snowflakes fast and faster fall;
And with swift and magic deftness,
Spread a spotless mantle over all.

Behold the landscape clothed in white,
Decked with crystals' shining light;
See the towering fir trees bending low,
With their load of sparkling snow.

—Berton Mercer, "Winter"

THE THISTLE.

As plants were among the objects most familiar to primitive man, they naturally came to be considered good or evil, according as their properties were found to be beneficial or injurious. The imaginative and pure reverence, however, which originally linked plant life with the personifications of natural phenomena, soon degenerated into a superstitious worship and became associated with the mummery of various kinds of impostors. The plants, through the manipulations of the quacks and witches, who largely composed the fraternity of the early herbalists, became endowed with powers to kill or heal, to control the weather, to gain or hold friends, and many other associations that have clung to them ever since. The Thistle appears to have been especially favored in this regard. It appears that an eagle had stolen the sacred Soma from the Hindu tree of life. Barely had he departed with the immortalizing draught before he was overtaken by a lightning bolt and stretched lifeless upon the earth. From the eagle's feathers sprang up the bramble, while the Thistle grew from his claws. About this time Loki, the evil spirit of the Norse Asgard, passed that way, bent upon mischief. The unpleasant qualities of the two plants at once appealed to him. Loki immediately gathered the seed and proceeded to sow them in the fields of his enemies, the result being that all the good seed was killed. This Aryan myth has given rise to the expression, "Sowing wild oats," and is believed to be the origin of the biblical story of the tares and the wheat, coming into Hebrew literature by means of the Indo-Iranians at the time of the Israelitish exile.

Now, Thor observed what Loki had done; so he hurled his hammer at the brambles and a bolt of lightning at the Thistles. For this reason the thistle blossoms are colored red and the plants became lightning plants. But the end was not yet. The beautiful goddess Freya, seeing the Thistles drooping under the chastisement of the god, took compassion and gave them to drink of the mead from the sacred goat of Valhalla, by virtue of which the plants became invested with immortality. Thus it came to pass that the Thistle has a dual life. It is a lightning plant, in which, in common with similar forms, like the vervain, the hazel, and the ash is never injured by lightning or approached by serpents. On the other hand, it being a protege of Freya, the goddess of Love, it straightway became a powerful love charm, and doubtless has done much execution in Cupid's lists.

The Thistle group is the most primitive of the Composite family, and it bears evidence of a vast evolutionary history. There are one hundred and seventy-five living species which are distributed over Europe, Asia, Africa, North and South America. The plants seem able to adapt themselves to almost any conditions, and their unpleasant spines are found bidding defiance to the reindeer near the Arctic circle, as well as successfully measuring strength with the prickly cactus and acacias of the tropics. On our own prairies only plants thus armed stand much show to survive the herds of cattle that wander over them, and this protection, together with their great productiveness, have rendered Thistles such a nuisance and menace to agricultural interests as to necessitate legislative action looking to their extermination. The Russian and Canada thistles are the worst offenders, and where they once obtain a foothold they, as a rule, remain. The unpleasant qualities of the Thistle, however, served to bring about its adoption as the national emblem of Scotland. The story relates that during the eighth century the invading Danes, while stealing up to the Scotch camp under cover of darkness, passed over a patch of cotton thistle, and the sudden cries of the injured men warned the guards,

463

BUR OR SPEAR THISTLE.

(Carduus lanceolatus.)

PASTURE OR FRAGRANT THISTLE

(Carduus odoratus)

FROM "NATURE'S GARDEN"
COPYRIGHT 1900, BY
DOUBLEDAY, PAGE & COMPANY

and thus the army was saved. Achaius, King of Scotland, adopted the plant as his emblem in recognition of this service, but it was not made a part of the national arms until the middle of the fifteenth century.

The origin of the Scottish order of the Thistle, or St Andrew, is somewhat uncertain. In 1687 it was restored to favor by James II of England and was given much prominence during the reign of Queen Anne. The membership was limited to from twelve to sixteen peers of the realm, the insignia being a golden collar composed of sixteen thistles, from which hung a St. Andrew's cross.

What is known as the purple star thistle was named for Chiron the Centaur. The great spines on the calyx suggested the military caltrop, an iron star of four points, which was used in battle to annoy horses.

Among other incidents in which Thistles have been in evidence may be mentioned the confusion into which the army of Charles the Bold was thrown, in 1465, because of the deceptive appearance of the plants. The Burgundians were beseiging Paris, and while the army slept scouts brought word that great numbers of spears were assembled outside the city walls. A panic was narrowly averted, and later it was discovered that the stems and spines of some very tall Thistles had produced the deception. The leaves of the Thistles were commonly employed by the Roman soldiers to shade their helmets, and it is stated that when Hugh Spencer, favorite of Edward II, was hanged, the mob, in derision, placed a crown of thistle spines upon his head.

Thistles seem to have figured in peace as well as war. In England the teasel is indispensable in the cloth mills, in which it is employed to dress the nap of the fabrics, and Virgil tells of the vest of Helen, which was embroidered to represent the plants, while the handles of the Cup of Eurymedon were entwined with them. Probably the crowning glory of the Thistle, if the story be true, lies in its contribution to architecture, in which capacity it deserves no less consideration than the Egyptian lotus. It appears from the narrative that a young girl of Corinth dying, her nurse placed on her grave a basket containing her toys, covering them with a large tile in order to shield the childish treasures from the weather. The basket was set by chance on the root of a Thistle. When the springtime came the plant grew until, meeting the tile, it was forced to turn downwards in graceful folds, which, catching the eye of Callimachus, he conceived the capital of the Corinthian columns.

CHARLES S. RADDIN.

The smallest effort is not lost;
Each wavelet on the ocean toss'd
Aids in the ebb-tide of the flow;
Each rain drop makes some flow'ret blow
Each struggle lessens human woe.

—Charles MacKay in the Chicago Record-Herald.

WITH SILVER CHAINS AND GAY ATTIRE.

After the cold, repeated rains,
The crusted branches rub the panes,
And ere the dawn the pelting hail
Adds fury to the roaring gale.
So wears the night—the morrow's sun
Proclaims the winter tempest done.
And what a morn! A crystal dome
Each rounded hill about our home!
More radiant is the sight, I ween,
Than e'er before has mortal seen.

Betwixt their glassy walls on high
The mountain corridors we spy,
And lo! all chandeliered are they,
Like costly palace of a day!
From limb to limb with whitest wreaths
The trees are festooned. All the heaths
With sun-tipped, icy spikes are bright;
And frost-stars glitter in the light.
With untold wealth the earth is strewn,
Each bush bears jewels, dimmed too soon.

Each stalk is cased in crystal mail,
Gem rivals gem in every vale;
No gaudier crown has sunflower's head,
With dew and fragrance round it shed.
Rich vitreous tubes each breeze shakes down,
What shafts and columns gird our town!
Fretwork and tinsel fairy fair,
Wondrous stalactites everywhere.
And so the emulation grows
Till Sol dissolves the wafted snows.

—George Bancroft Griffith.

THE BIRDS IN THEIR WINTER HOME.

(In the Woods.)

From the region of the Great Lakes to the Gulf there is no section that contains more to interest the naturalist than the hills and forests of central Mississippi. Here no winter's rigors chill the blood and drive the forest folk to remote or inaccessible retreats. Into this land of warmth and sunshine, this land of the 'possum, persimmon and the pickaninny, Jack Frost does not come till November is well advanced. Even then he comes only to clear the air, bring down the leaves, and announce the coming of the short, make-believe winter.

Go out doors in December after the leaves have fallen and take note of the varied life in wood, field and brake; think that now in the far away North the wind howls through the leafless trees, finding few creatures hardy enough to resist his blasts save the snowbird and the hare. The blasts of chill November and chillier December have sent myriads of birds down here where food is plenty in savannah, forest and thicket. On the wooded knolls under the beeches and hollies congregate the hungry hordes, feasting on seeds and berries of the rattan, holly and smilax. Flying in and out of the briar-thickets are innumerable white-throated sparrows fleeing from frozen Canada and the lake country. A clear long-drawn whistle strikes the ear. We seek the source. A little brown bird much the size and shape of an English sparrow seated on a shrub projecting from the briars raises his head and whistles a sound as pure and free from flaw as the little spot of white upon his throat. Cheewinks as fussy as old hens toss the dead leaves about; grackles in shining black stalk dignifiedly about; while cardinals in low boughs and underbrush give a touch of vivid color to the scene just as the pink and white dresses of the girls form a pleasing contrast to the somber blacks and grays of the gentlemen's attire at a Fourth of July celebration.

Second to none in delicate beauty of coloring, king of his tribe, is the fox-sparrow. Russet and rufous on the back, beneath the white marked with brilliant stripings of the same color as the back, on the feathers of his head and upper neck a clear pearly luster which is irridescent in the sunshine but invisible in the shadow, he is a marked bird, the peer of any in the woods. Happy the bird-lover who has the opportunity to study this magnificent bird in his winter home; one so favored can well afford a feeling of pity for the less fortunate dwellers in the central states who seldom make his acquaintance except through the medium of the museum or the manual.

Florida blue jays in black, white and blue hop about among the rustling leaves or seated on a limb, hammer away at an acorn. Possessing a more extensive vocabulary than our familiar Northern jays more loquacious, more sociable, they are certainly the artists of the tribe. No one who has ever heard their clear musical notes as they play in the tree-tops or hop about on the lawns as friendly and cheerful as robins, can ever entertain quite such a low opinion of their musical ability as he did before. Resonant, ringing tinkling, this call is the forest chime that summons the little children of the wood to vespers, heard at evening with white throats calling to one another from brush-heaps and briar thicket, it is the expression of this strong pure life away from the haunts of men. Under such surroundings it is easy to forget the cruelty practiced by our gifted blue-coat when spring has filled these woods and fields with nests and nestlings.

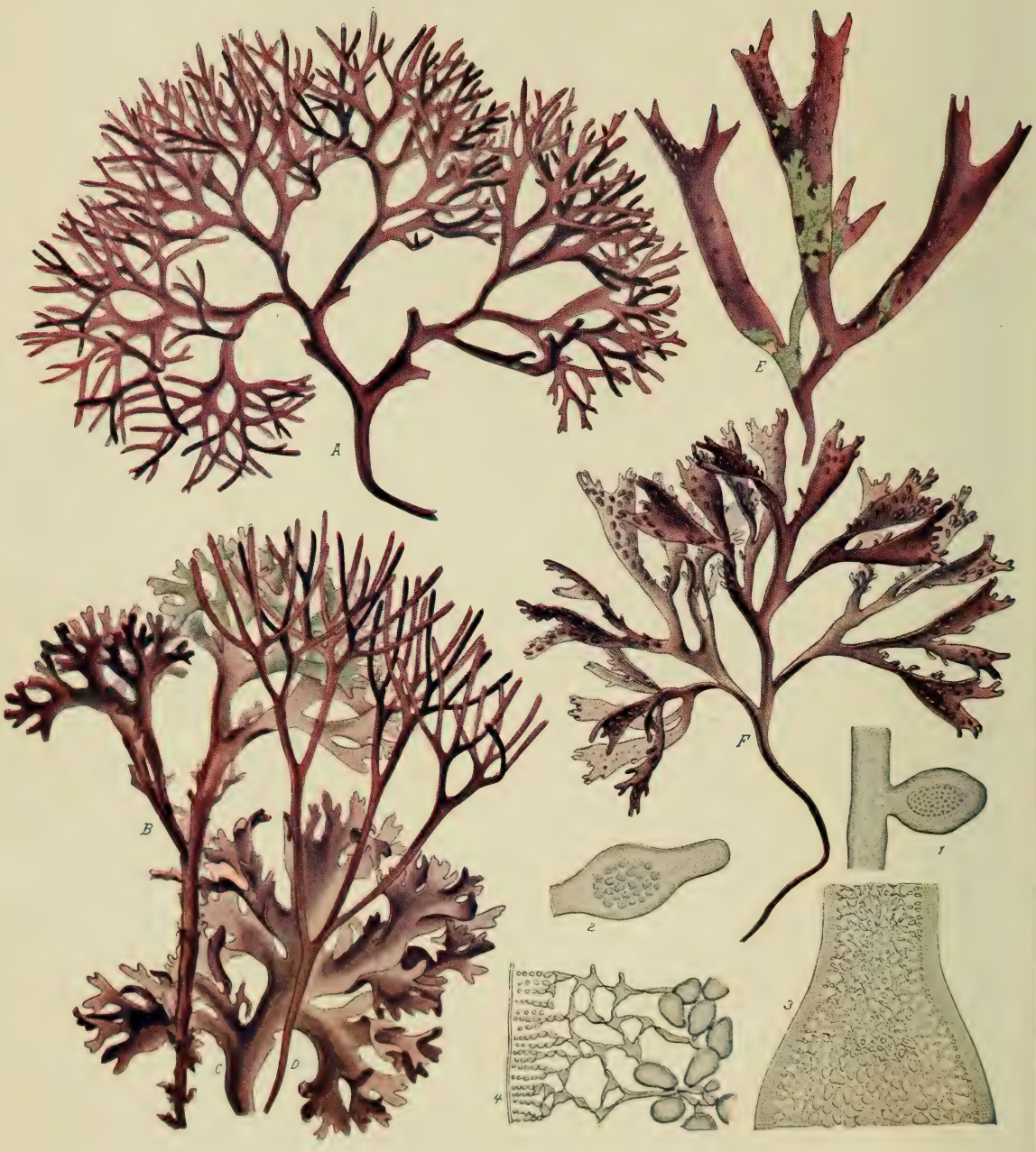
But here comes one for whom no cloak

of charity is needed, the musician pre-eminent among all this gifted throng, the Carolina wren. A slender curved beak a trim bunch of cinnamon-brown feathers barred with darker brown on wings and tail, a buff breast, a little throat pulsating with vigorous buoyant life are the most conspicuous characteristics of this chorister of winter woods. He has been called the mocking wren. Let no one be deluded by such a term into the belief that he has no individuality, for, although his song has in it the whistle of the cardinal, the dignified song of the brown thrasher and the effervescence of the mocking-bird, through it all there runs a peculiar quality all his own. Swinging on a rattan vine, singing with all the abandon of a bright May morning he seems the most vigorous exponent of "the strenuous life" in this land where langorous breezes blow soft and warm, bringing with them a suggestion of the sun-kissed waters of the Gulf and odors of resin and turpentine from the interminable forests that intervene between us and the coast.

Down by the branches on cold frosty mornings you will find a little brown ball of a bird, that with tail tilted up over his back dives under every bridge, slides into every brush-heap, or hides tantalizingly behind every log that comes in his path. Not shy, yet not bold, he disappears from view at the most exasperating moments. Coming with the frosts, going away when they cease, he certainly deserves the name of winter wren. Shorter than the Carolina, darker on the back and tail, his nervous, fidgety manner makes it an easy matter to distinguish him from his more talented cousin. In these winter woods he never sings. Beyond an occasional metallic "chip" now and then I have never heard him give utterance to the emotions that fill his plump little breast. He is the silent observer of the busy life about him, a sitter in his own chimney corner, where he smokes his pipe and studies life subjectively, a modest little philosopher in cinnamon brown and black.

Darting in and out among the lower branches of a giant beech, now flitting to a new position with movements as sudden and unexpected as those of a humming-bird, now running along a limb like the brown creeper, comes another tiny friend the ruby crowned kinglet. A plain little Quaker he seems in his suit of olive green without a patch of yellow or black to relieve the severe simplicity of his garb. Even the tufts of brilliant red feathers on his head is concealed from vulgar gaze. If you have sharp eyes and a moderate degree of patience your efforts to get a glimpse of the red tuft will by and by be crowned with success, but don't be disappointed if you don't see the ruby the first time you see the bird. I had observed the cheerful little chap time after time in my morning rambles in the woods, and had come to know every twist and motion of the tiny body before I caught a glimpse of the longed-for tuft. Finally one morning as he bent his head to pick up some sweet tid-bit the olive-green feathers parted and I saw his tiny crown. A modest genial little anarchist he is, never parading his opinions before an admiring public, but suddenly springing down in front of us on some low bush he flaunts his red flag and is gone before we realize it. Having once learned how and when to look for his crown it is an easy matter to find it again whenever his little majesty feels inclined to give you the opportunity.

James Stephen Compton.



FROM KŒHLER'S MEDICINAL-PFLANZEN.

464

IRISH MOSS.

CHICAGO:
A. W. MUMFORD, PUBLISHER.

Chondrus crispus.

Gigartina mamillosa.

IRISH MOSS.

(*Chondrus crispus* lyngb.)

A weary weed toss'd to and fro,
Drearily drench't in the ocean brine.

—Cornelius G. Fenner, "Gulf-Weed."

Those who have spent any time along the sea shore will recall the familiar seaweeds washed upon the bank by the tide and have watched them idly waving to and fro in the water near the shore where the depth does not exceed several meters. There are perhaps no plants more beautiful from the purely artistic point of view. Many a visitor to a distant sea coast has collected and mounted the more beautiful and delicate ones as souvenirs to delight the eye of friends. The delicate coloring and manifold branchings are the characteristic of the more attractive species. Some are quite small, while others grow to enormous size. The so-called "sea lettuce" is of a bright grass green color, forming a large leaf like expansion. The Gulf weed, a species of Sargassum, is very plentiful in the gulf regions of the southern United States, Mexico and Central America. During heavy storms great quantities of this are torn loose from their fastenings and carried far out into the Atlantic where they form the Sargassa sea and impede ocean traffic. The sailors on the ships of Columbus encountered such a sea and revived their hopes of soon seeing land, as they rightfully conjectured that the sea weeds were washed from the shore.

Sea weeds in general are variously employed. They are the sources of iodine and bromine. They are collected in large quantities and used as fertilizers. The Chinese and Japanese use some species very extensively as food. The stipes or stalks of Laminaria cloustoni are used in surgery.

Sea weeds and other aquatic plants serve as a protection and food for a host of animals of the seas; especially fish, cray-fish, lobsters, etc. The smaller fish in trying to escape from his larger, ravenous enemy hides among these plants. Bryant, in Sella says:

"Here were mighty groves
Far down the ocean-valleys, and between
Lay what might seem fair meadows, softly tinged
With orange and with crimson. Here arose
Tall stems, that, rooted in the depths below,
Swing idly with the motion of the sea;
And here were shrubberies in whose mazy screen,
The creatures of the deep made haunt."

Chondrus crispus, the plant of our sketch, is a sea weed of the Atlantic. It is quite plentiful along the shore lines of the Atlantic states, Ireland and England. It is commonly known as Irish moss, though it is not a moss at all. It is also known as Carrageen moss or Carrageen. It is a perennial plant, 3 to 10 inches high, consisting of a flat, much branched thallus, as shown in the illustration. It is variable in its coloring, greenish purple, purplish brown, grayish purplish brown, etc., somewhat waxy or translucent in appearance. It is also very variable in form; no two specimens being exactly alike. It attaches itself to rocks, pebbles and boulders by means of a basal disk which serves merely as a mechanical support, the frond or thallus absorbing its nourishment from the sea water. In consistency the plant is cartilaginous, mucilaginous, and is entirely dissolved on boiling. When dry it becomes very hard, brittle and elastic and assumes a light-yellowish, translucent appearance. Chondrus crispus is closely similar to Gigartina mamillosa, another sea weed, with which it is usually associated.

Irish moss is extensively collected along the coast of Massachusetts. The plants being spread high up on the beach to dry and bleach in the sun. Its principal use is in medicine, although it has per-

haps no curative properties in itself. It is a demulcent and emollient, that is the mucilage present tends to allay irritation of inflamed mucous membranes as in sore throat, pulmonary complaints, etc. It has been extensively employed as a popular remedy in dysentery, kidney troubles and pneumonia. Its principal use at the present time is as an article of diet, in the preparation of soup, blanc mange and jellies. Sometimes it is combined with chocolate or cocoa, sugar, lemon juice, etc., to improve the flavor.

Bandoline, a fixative for keeping hair in curl is commonly prepared from carrageen. It is also used as sizing for paper, straw hats, felt hats, cotton goods and for thickening the colors used in calico printing. It is also used for clarifying coffee, beer and other drinks.

Carrageen is a word of Irish origin and was apparently originally applied to sea weeds in general. The Irish were the first to use this plant medicinally and as a food.

Description of Plate.—A, B, C, D, different forms of Irish moss; E. F., forms of Gigartina mamillosa; 1, section of thallus of G. mamillosa; 2, 3, 4, sections of Chondrus crispus.

ALBERT SCHNEIDER.

THE CARDINAL FLOWER.

I love each flower beneath the sun,
  Wherever it buds and blows;
From the pale arbutus that hides like a nun,
  To the flushed and queenly rose.

But the cardinal flower to me is best
  As close by the rivulet's brim
It regally wears its flaming crest,
  In the woodlands cool and dim.

I long to lie in the pine tree's shade,
  Or tread on the tufted moss;
If once away from the ways of trade,
  I'd care not for gain or loss.

I would peacefully fall asleep at night
  To the sound of singing streams,
With the glowing cardinal's flower of light
  To illumine the realm of dreams.

—Belle A. Hitchcock.

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. XI. FEBUARY, 1902. No. 2

FEBRUARY.

But Winter has yet brighter scenes—he boasts
Splendors beyond what gorgeous summer knows;
Or Autumn with his many fruits, and woods
All flushed with many hues. Come when the rains
Have glazed the snow and clothed the trees with ice,
While the slant sun of February pours
Into the bowers a flood of light. Approach!
The incrusted surface shall upbear thy steps,
And the broad arching portals of the grove
Welcome thy entering. Look! the massy trunks
Are cased in the pure crystal; each light spray,
Nodding and tinkling in the breath of heaven,
Is studded with its trembling water-drops,
That glimmer with an amethystine light.
But round the parent-stem the long low boughs
Bend, in a glittering ring, and arbors hide
The glassy floor. Oh! you might deem the spot
The spacious cavern of some virgin mine,
Deep in the womb of earth—where the gems grow,
And diamonds put forth radiant rods and bud
While amethyst and topaz—and the place
Lit up, most royally, with the pure beam
That dwells in them. * * * *

—William Cullen Bryant, "A Winter Piece."

THE BLUE-HEADED VIREO.

(*Vireo solitarius.*)

The Blue-headed Vireo, or its varieties, of which there are several, frequent nearly the whole of North America. The typical form of the species, that of our illustration, has a range covering Eastern North America and extending westward to the great plains. It breeds from Southern New England and the lake states northward to Hudson Bay and southward in the higher altitudes of the Alleghenies. It passes the winter in Cuba, Mexico and Central America. The Blue-headed Vireo is frequently called the Solitary Vireo, or Greenlet, because of its retiring habits. It is a bird of the forest and stays very close in these quiet retreats. Yet it is, as a rule, easy of approach, seeming to possess both curiosity and confidence. Mr. Bradford Torrey writes with enthusiasm regarding the pretty habits of this bird. He says: "Its most winning trait is its tameness. Wood bird as it is, it will sometimes permit the greatest familiarities. Two birds I have seen which allowed themselves to be stroked in the freest manner while sitting on the eggs, and which ate from my hand as readily as any pet canary; but I have seen others that complained loudly whenever I approached their tree. Perhaps they had had sad experiences."

Possessing a happy and cheerful disposition, this species, like the other vireos, sings while working. Listening to them, we are reminded of the lines in "The Vision of Sir Launfal"—

"The little birds sang as if it were
The one day of summer in all the year,
And the very leaves seemed to sing on the trees."

Fortunate, indeed, is he who has the pleasure of watching this Vireo working upon its home and uttering "inexpressibly sweet and tender love notes."

Mr. Thomas M. Brewer says that the Blue-headed Vireo "usually makes a nest of coarse materials somewhat loosely put together, covering it with lichens, thus assimilating it to the moss-covered limb from which it is suspended." The materials used, however, are not always the same. One nest, of which Mr. Brewer speaks, was "covered over, as if cemented, with bits of newspaper." The external portion of another was "composed of the silky cover of cocoons, woven into a homogeneous and clothlike fabric, by some process quite inexplicable." The nests are frequently constructed of fine bark fibers, withered grass and pine needles woven together with moss and lined with plant down, fine grass and small, fibrous roots.

Much has been written regarding the song of this handsome bird of the woods. The words of Mr. Torrey perhaps best describe it. He says: "The Solitary's song is matchless for the tenderness of its cadence, while in peculiarly happy moments the bird indulges in a continuous warble that is really enchanting." It has, too, a musical chatter and a pretty trilled whistle."

In Mr. Keyser's experience "the song was varied and lively, sometimes running high in the scale, and had not that absent-minded air which marks the roundelay of the warbling vireo. It is much more intense and expressive."

Mr. Brewer describes the song as a "prolonged and very peculiar ditty, repeated at frequent intervals and always identical. It begins with a lively and pleasant warble, of a gradually ascending scale, which at a certain pitch suddenly breaks down into a falsetto note. The song then rises again in a single note and ceases."

The notes of the female suggest to Mr. Burroughs "the bleating of a tiny lambkin." To Mr. Nuttall "its song seems to be intermediate between that of the red-eyed and the yellow-breasted species, having the 'preai, preai,' of the latter and the fine variety of the former in its tones." To all "the music of the Solitary Vireo is delicious."

FROM COL. CHI. ACAD SCIENCES

465

BLUE-HEADED VIREO
(Vireo solitarius.)
3/5 Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

BOOK AND MRS. OYSTER

At the death of his dear mother little Willis went from his western farm home to stay for a few years with his Aunt Jennie in an eastern seaport town.

One day she had oysters in the shell for dinner. As his parents had wisely tried to keep his eyes and ears keen in regard to common things, he was full of questions.

His aunt told him that the next time she bought live oysters she would give him some to watch and study. Only a few weeks later she was expecting company to dinner and had a chance to keep her word.

"Fill this with water," said she, giving him a plain glass fruit dish, "and put your oyster in it."

"But," said Willis, "oysters live in sea water, which is salty."

"Yes; they do live in sea water. In order to grow and thrive they must have vegetable and mineral substances found in sea water. But they can live in fresh water. Oystermen make a practice of moving them from their banks to spots near the mouth of a river where the water is not nearly so salty or even quite fresh. Here they get washed out and freshened. They look plumper and some of the strong, salty taste being taken away, they have a more delicate flavor. All the largest oysters in the market are fattened in that way."

Willis did as directed.

"Do you notice how the oyster is covered?" asked his aunt.

"Yes, it has two shells which are joined like a hinge at the smaller end."

"Do you notice that they are different?"

"One shell is larger and deeper near the hinge. The outside of it is white and pretty. The shelly matter is laid in rings, some of which seem full, making me think of a tucked and ruffled skirt. The other shell is smaller, darker and nearly flat."

"Ask Bridget if she has some small crackers to give you one. Powder it and throw it on top of the water. If she has none a spoonful of corn meal will do for food. Animals which are deprived of natural ways of getting a living must be supplied with suitable food."

When he had done that she handed him a pair of shells, in one of which lay an oyster. "Here is another one which I had opened for you. I am very busy to-day. While the company is here you can amuse yourself by watching what happens. Examine the dead oyster and find out what you can about it."

Willis was delighted with his odd pet. He watched the live creature for some time. At first its two shells were tightly closed. After being quiet for some time it cautiously opened its shell a little way as though it was peeping at him. He was so pleased that he grabbed his hat and ran to fetch his neighbor schoolmate, Joseph. Once in a while a bit of cracker would be drawn between the shells and, in time, disappear. The two boys were very much interested.

"Let us look at the dead oyster, Willis."

"All right."

"Taking a toothpick in his hand he tried to turn over the oyster in the shell. He found that a thickened muscle near the middle part was fastened to the half shell. Tearing it loose he saw at this place a dark, purplish spot just like one on the other half shell.

"I wonder what makes that hard spot?"

"Oh, see, Joseph! Its body has two sides. The side lying in the deeper piece of shell is larger. Down the middle is a division and the edges come together something like the cover of a book. Over all is a white covering with such pretty frilled edges. See, I can roll it back quite a little way."

"That is so. How pretty it is. It has no head. Does it eat? I wonder if it has a mouth."

Willis searched carefully for an opening. At last he found one near the hinge.

"What is this?" asked Willis, handing his playmate a little doubled-up thing about as large as a pea.

After examining it carefully for a moment Joseph exclaimed: "You must have found its mouth. This is surely a baby crab which has been swallowed. See its little legs drawn up to its body."

Both agreed that they had found a crab. They again turned their attention to the oyster's mouth.

"What a large mouth for such a little animal! See how far I can put the point of my knife into it. It must have some bowels. I wonder if its bowels are here at the larger end. It looks puffy and dark inside. The thing is so slippery that I can scarcely handle it."

"Can it see, Willis?"

"I can find no eyes."

The boys took the oyster out of the water several times that they might see how it looked tucked so snugly between its shells. Every time they touched it the opening was closed tight. Thus the boys spent the afternoon.

When Joseph went home Willis said: "Come over to-morrow and we will get auntie to tell us more about the oyster."

After dinner Willis went to his room and watched his oyster again until his eyes drooped.

Presently there was a thump-thump-thumping across the floor behind him. What was Willis's surprise to see a big library book come near and with one leap place himself on the table. He was again surprised to see the oyster reach a long arm out of the water and the book another long arm from between its leaves. They two then shook hands. Both raised themselves to a vertical position and made a bow to Willis.

"We will try to tell you what you wish to know. Then you can surprise Aunt Jennie by telling her some things." As he spoke Mrs. Oyster swelled herself up so large that the soft white matter protruded from the shell; for she had never before had the high honor of talking to a real boy.

Willis was so pleased that he clapped his hands.

Mrs. Oyster crawled up and nicely balanced herself on the edge of the dish. Willis was speechless with surprise.

Book spoke: "This is Mrs. Oyster. She belongs to the subkingdom of shellfish called Mollusca. All of her folks have soft bodies. As she is protected by a shell of two parts, she is said to be a bi-valve. Her relative, Snail," said he, motioning with his hand, "having a single shell is called a uni-valve."

Looking in the direction of the movement of Book's hand, what was his surprise to see a snail with a shell on his back crawling across the table. Where he came from, Willis could not tell.

"When looking at that oyster this afternoon you noticed a thickened portion fastened to a dark spot on the valve," said Book.

"I remember," said Willis.

"There is a muscle," continued Book, "fastened at the dark spot on each valve. It becomes very strong by use. An oyster knows how to let it stretch, thus opening the valves to allow water to enter his chamber. It also knows how to draw it up so as to close them to keep out intruders. The white covering over the body is called the 'mantle'. If you notice the inside of an oyster valve, you can see a mark showing how near to the edge the mantle came. That is called the pallial line.

"If you will keep on looking you will succeed in finding that besides a mouth an oyster has a stomach, liver and intestines, a nervous system, and a heart that pumps blood, though it is not red but white blood.

"When you breathe, you take in your lungs from air what is called oxygen. Without oxygen there can be no life. Anything that can not in some way take in oxygen can not have life. Water as well as air contains it. Oysters have no lungs, but they have leaf-like gills on each side of the body. By means of these they get oxygen."

"Can an oyster see?" asked Willis.

"It has organs of sight, hearing, smelling, touch."

"Where are his eyes? We could not find them."

"Hunt them again," laughed Book. "I think that I will not tell you that. Since an oyster has no head you must not be surprised to find them in an odd place. The dark part which you noticed this afternoon and which shows so plainly in a cooked oyster is its great liver.

"To-morrow I will again try to find eyes. Perhaps auntie will let me take her glass."

Stepping near and pointing as he talked, Book continued:

"To protect her soft body, friend Mrs. Oytser's mantle produces a shell of lime which grows by being enlarged around the edge. The high point on the left valve is called the beak. If you will scrub her shell with a brush to-morrow you will see lines running around the beak in the same direction as the margin. These are called 'lines of growth.' By them oystermen can tell the age of the shellfish."

"How strange!" said Willis thoughtfully. "Tree trunks also show lines of growth."

"Where did you come from?" asked Willis of Mrs. Oyster.

"As I have lived most of my life within this narrow shell," she answered with a cast-down air, "I have no idea where I came from nor where I now am. Shall I tell you the story of my life?"

"Yes, do, please. It must be interesting. You are such an odd creature."

"The first thing I remember," said Mrs. Oyster after she had drawn a full breath, "is that I was a tiny bit of white mucus, or egg, as people say, swimming gayly around with my brothers and sisters in my mother's shell. It was worse than in the case of the old woman who lived in a shoe. There were two or three thousand of us—maybe more. At any rate there were so many of us that our poor mother never had time to count us. But she was one who never worried. To keep us from getting lost she kept us in by closing her shell tight. That let her get no food. With a true mother's spirit she fed us on the substance of her own body until she became very poor."

"Beg pardon," said Book. "Let me explain to our friend. At that time the mucus within the shell in which the young oysters swim looks milky. The old oyster, who is said to be in the milk, is then unfit to eat."

"By the time two weeks had rolled around," went on Mrs. Oyster, "things in our house began to turn very dark in color and our mother received a prompt message from Dame Nature saying that she must turn us out of her house and home. Poor mother! She knew that Dame Nature's orders must be obeyed or death to the whole family would come. So she bade us good-bye, gave us a bit of advice, and opened the door. Knowing nothing of the size of the world and the things which happen outside of a shell, and thinking that we were going out only for a little romp, we in one voice assured her that we would not go very far.

"Eagerly we rushed out, to find that thousands of mothers on that same oyster bank were also just expelling their little ones. I became lost from my brothers and sisters. The water was so full of myriads of babies like myself that it took all of my attention to simply keep out of the way of the crowd. The oyster babies all looked so much alike that I lost hope of ever knowing one of my brothers again. Indeed, I could scarcely tell which was myself. Our mothers were down deep, but we rose near the surface where we could see the beautiful blue sky.

"Did you find anything to eat?" asked Willis with great concern.

"Oh, yes. We found plenty of tiny animals and specks of vegetables that eased our hunger and helped us to grow. After swimming freely for a few days our shells began to form and we found ourselves unable to swim long distances. They soon weighted us down and we began to sink. I heard a mother oyster pitifully calling, 'Baby, baby, come to mamma.' I wondered if it were my mamma, but I could not get to her. I came along by a piece of tile. Being tired and worn out, as that was the first clean thing I had seen I clutched to it, thinking that after I had rested a few moments I could go on. But I found that I could not loosen myself. Looking around, I could see tile after tile looking like they had just been scrubbed. Just like my piece, every one was soon thickly covered with 'spat,' as the oystermen called us. As fretting has no part in an oyster's life we contented ourselves thinking that we might in some way again get loose.

"'Perhaps,' said one, 'some of those big things we saw may come along and brush some of us off.' 'Perhaps,' said another, 'the owner may take up his tile and clean it off for other use some day; it certainly is of no use with us crowding on it.' So we lived in hope."

"How large were you?" asked Willis.

"I can not tell how fast I grew."

Book again made himself useful. "Men who have watched and measured their growth claim that at two weeks of age a young oyster is as large as a pinhead; at that of three months as large as a pea. Its shell grows about an inch in diameter each year for the first three years. After that its size does not increase so fast."

Mrs. Oyster again resumed her story. "At last one day they said that we would soon be large enough for 'seed.' A few days later we found ourselves broken off from our clutching places and shut up in some dark place. The next thing we knew we were being lowered on a sandy bottom not so deep down as our old home. Now, when we catch and grow on something we like a vertical position. At first our two valves are alike, but in time the left one becomes more convex. If the shell of one of us becomes so heavy that it breaks off, the convex side, in dropping, goes to the bottom. When they planted us the men were kind enough to lay us in that position.

"When I was about a year old I began to spawn. It is needless to say that I lived over again the sad experiences of my poor mother. Some of the spat attached themselves to my shell and I gladly adopted them. For a while we were very happy. Then one day, those great iron tongs again disturbed us. The 'seed' were broken off and I was replaced childless. Next time I spawned I understood what it all meant. I begged my second set of adopted children if one of them ever had a chance to do so to send me a message. I lived with the great hope that I might be allowed to remain there until I had heard from some of them."

"Did you ever hear from any of them?"

"From only two of my great family, but other oyster mothers have not had even that much good luck. One day a diving bird came along hunting me. He said that another bird with great strong wings had a message for me from one of my children.

"How excited I became! One of my stolen children had been seen at the New York harbor.

"About two years later," continued Mrs. Oyster, "a fish brought me a letter." Taking a crumpled paper from out of her pocket and wiping her watery eyes on her mantle frill she read:

Dear Mamma:

I have begged one of the students to write this. When he goes fishing again he will try to find a fish who will promise to take it to you.

Since I was torn away from you I have been in several places. I am now a fine oyster—a "beauty," I heard some one say. I am at present in a great building called a college. Another of those wise men who look at you through glasses and whom they call "professor" is making plans to analyze several of us raised in different places. People want to know, it is said, of what value we are as food. It breaks my heart to think of what we must come to.

Farewell,

YOUR CHILD.

While Mrs. Oyster again wiped her eyes Book said, "It is too late for me to tell you much about this Prof. Atwater. I will only tell that he says that one quart of oysters contains about as much nutriment as one quart of milk. As food, oysters form flesh and make heat and force in the human body. You can at any time consult the books farther."

"Finally," said Mrs. Oyster, "I was taken away from my sea home and lived in a place where the water was nearly fresh for a little while. After 'floating' here for a couple of days I was sent to the market and sold as an extra fine oyster. They called me a 'blue point.'"

Just then Aunt Jennie shook Willis and asked him why he had not gone to bed. He rubbed his eyes and looked around, surprised to see his oyster lying quietly in its dish, with no snail nor book in sight.

The next morning he told Joseph and his aunt about his dream. "After this," said he, "when I wish to know things which I cannot notice and understand, I will ask the books. They know so much. Mrs. Oyster did not get to tell me about her cousins who make pearls. I mean to consult some books about them this very day."

LOVEDAY ALMIRA NELSON.

FROM COL. CHI. ACAD. SCIENCES.

CALIFORNIAN THRASHER.
(Harporhynchus redivivus.)
3/5 Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

THE CALIFORNIAN THRASHER.

(*Harporhynchus redivivus.*)

One of the finest songsters among birds is the California Thrasher. Though confined to the coast regions of California, it is quite abundant and seems to bear to that locality the same relation that the brown thrush, or thrasher, does to the thickets further east. The song of this Western Thrasher is exquisitely sweet, and by some it is considered far superior to that of any of the numerous songsters that frequent the woods and brush of the Pacific coast. These lines, written by Mr. Wasson regarding the song of the brown thrasher, apply equally well to the bird of our illustration:

O, hark to the brown thrush! Hear how he sings!
Now he pours the dear pain of his gladness!
What a gush! And from out what golden springs!
What a rage of how sweet madness!

It is in the morning and in the evening that this Thrasher pours forth its song from some prominent and exposed perch. Then, as it were, with all care dismissed from its mind, all the energy of its being is thrown into a hymn of nature. By some this song is considered richer than that of the mockingbirds, though the Thrasher has but one air.

As a rule the California Thrasher frequents wooded thickets, though it is often found in shrubby fields and hedges, and the dense thickets bordering streams are especially attractive, for here it finds the quiet that its nature seems to crave. Unusually shy and distrustful of man, it generally avoids his habitations, and, like the brown thrasher, resents intrusion with a peculiar and complaining note. Yet the female is inclined to remain on her nest and allow close inspection.

Because of its short wings the movements of this Thrasher are rather heavy. Its flights are short and usually from bush to bush, while constantly opening and shutting its tail. Its life is not confined to trees and shrubs, for it moves easily on the ground, hopping rapidly with accompanying jerks of its tail. It is said that it will scratch in the layer of old leaves under trees, like a domestic fowl when hunting for its food. It prefers insect food and seldom eats fruit of any kind, except when food of its choice is scarce.

Its favorite haunts seem to be the regions of scrubby oak and greasewood brush of the deep mountain gorges. Here it builds its home, which "is a coarse, widely constructed platform of sticks, coarse grass and mosses, with but a very slight depression. Occasionally, however, nests of this bird are more carefully and elaborately made. It is always well hid in the low scrub bushes."

Both the sexes assist in the care of the eggs, though the male, as befits the father of a family, usually stands guard over the nest, giving a quiet note of warning on the approach of danger. Both sexes are said to be adepts at misleading an intruder, for they will fly away from the nest to the ground or to some thicket at a distance from their home, and there by plaintive notes soon attract the intruder, especially if he is a nest hunter. In this, as well as in all its habits, it so resembles the brown thrasher that it may be considered its representative on the Pacific Coast.

WINTER'S SECRET.

This beautiful day when the sun so bright
  Is giving my garment most beautiful hues,
I'll just look over the birds in sight—
The living gems on my cloak of white—
  And the most precious I will choose.

I'll sit in my tent of brilliant blue
  And look through its lacings of willow gold,
That shows a flashing of cardinal hue.
Yes, that's my redbird—I see him. Don't you?
  He's here if my breath is cold.

There's darker spots close by redbird's flash;
  They look like shadows compared to him.
Now they dip in the brook where its waters plash
O'er the willow's roots with a rippling clash,
  And drink from my ice cups so thin.

I think they are snowbirds. Hello, little mutes!
  Just answer me now till I'm sure it is you.
You look with your rusty brownish suits,
As you flirt and dance o'er the frozen roots,
  Like the tasseled cords of my shoe.

Haw! haw! from the treetop laughs out crow.
  "Don't you know I am out with the very best?
I love the sun, and I flap to and fro,
The one black-wing not afraid of the snow,
  Though you sometimes call me a pest."

And Mr. Field Finch with chestnut hood,
  As he swings and sways on his weed perch brown,
Calls in tones that you will not use when you're good,
"Can't you see a body? See! I'm here near the wood
  Where the berries and seeds rattle down."

I'll now call Robin. Where are you, dear?
  I know I saw you this early morn,
A crimson breast in the pine tree here.
Come, Robin, come! I'm sure you are near;
  Yes, yonder you sit in that thorn.

Oh my cloak is so gay and its gems never rest,
  But flutter and shine, 'neath the rays of the sun;
So I'll draw it close to my rugged breast,
And never will say which one I love best —
  For I love them all—every one.

—Mary Noland.

A QUEER PARTNERSHIP.

A fine afternoon of that lovely spring month, May, found me ready for an afternoon collecting among the birds. Leaving home, I made my way to the river bank, and slowly strolled along its banks, finding much to amuse and interest me among the birds and flowers, seeing many old friends and a few new ones. After going about half a mile, I came to a well wooded place on one of the banks where the tall pines found safe homes for the crows, and a few families were raised here every year. A little way back, partly up the hill, was a dead basswood stump or tree, which contained the home of a golden-winged woodpecker or flicker, which I had found a few days before by seeing the bird leaving the nesting hole. As the hole was between 30 and 40 feet from the ground, I put on my climbers and was soon in a position to investigate; so, seating myself on a large limb that branched out just below the nest, I inserted my hand, and got quite a start on catching hold of some soft, downy creature, which I thought must be a squirrel, but imagine my surprise to find that I had secured an adult screech owl from out of the woodpecker's nest. The owl, which had lain quietly enough in my hands, put an end to my thoughts by suddenly coming to life, and very active life at that, and putting its claws into my hand, prepared to give itself a good startoff. But I had hold of its legs, and as I did not like the way it was holding on, I put it back into the hole, from which in the meantime I had taken an egg, which on examining proved to be the woodpecker's and not an owl egg. Though the eggs are both white, the woodpecker's is larger than it is broad and more of a glossy texture, while the owl's is nearly round and also much larger.

Now was the puzzle, what was the owl doing in the woodpecker's nest, which was claimed by the latter, as it had deposited an egg in it, and also was seen leaving the nest a day or two before. The only conclusion that I could arrive at was that the owl had taken possession for the day and so turned the woodpecker out.

So far I had not been able to find an owl's nest, but as I could see by the loss of feathers that the owl had beeen setting I proceeded to try and find the nest, and decided to try the tree further up; so, leaving the owl in the flicker's home, I continued my climb to the top of the stub, and found the top rotted away, leaving quite a hollow eighteen inches deep with a small hole through a rotten place in the bark, through which I could see something white, so, carefully putting in my hands, I was delighted to find four young owls which were about ten days old, ugly little things, covered with a dirty white down, with the feathers just commencing to show and with their yellow beaks and large eyes. They did not look a very interesting pet, but still I secured two and left two for the mother owl. I descended the tree and put my treasure safely away in my collecting bag.

I would like to know how the owl and flicker arranged the boarding matter, for I did not get time to go back for a week, when from the woodpecker's nest I took six eggs and found the two owlets nearly ready to fly, but I saw neither of the old birds. So whether the owl continued to stay with the flicker or not, or whether it had just gone for the day, I shall never know; but still it was interesting to find the two nests on the one tree within three feet of each other, one containing eggs and the other young birds.

The owls that I had taken were safely reared and prove both amusing and interesting pets, but their life while in my keeping we will leave for another time.

D. WELBY.

THE BROAD-TAILED HUMMINGBIRD.

(*Selasphorus platycercus.*)

When morning dawns * * * *
The flower-fed hummingbird his round pursues;
Sips with inserted tube the honied blooms,
And chirps his gratitude as round he roams;
While richest roses, though in crimson drest,
Shrink from the splendor of his gorgeous breast.
What heavenly tints in mingling radiance fly!
Each rapid movement gives a different dye;
Like scales of burnished gold they dazzling show—
Now sink to shade, now like a furnace glow!

—ALEXANDER WILSON.

If we desire to study the Broad-tailed Hummingbird in the regions that it frequents, we must journey to the mountainous district of Western North America. Here it may be found in large numbers, for it is the most common of all the species that frequent the mountains. It seeks its food of insects and honey from the flowers of a prolific flora extending from Wyoming and Idaho southward through Colorado, New Mexico, Arizona, Texas and over the table lands of Mexico into Guatemala. It is pretty generally distributed throughout the various mountain systems between the eastern slopes of the Rocky Mountains and the Sierra Nevadas."

Dr. Merriam found the Broad-tails very abundant in the balsam and pine belts of the San Francisco Mountains of Arizona, where their principal food plants were the scarlet trumpet flower and the large blue larkspur. Of their habits he says, "They wake up very early in the morning and go to water at daylight, no matter how cold the weather is. During the month of August, and particularly the first half of the month, when the mornings were often frosty, hundreds of them came to the spring to drink and bathe at break of day. They were like a swarm of bees, buzzing about one's head and darting to and fro in every direction. The air was full of them. They would drop down to the water, dip their feet and bellies, and rise and shoot away as if propelled by an unseen power. They would often dart at the face of an intruder as if bent on piercing the eye with their needlelike bill, and then poise for a moment almost within reach before turning, when they were again lost in the busy throng. Whether this act was prompted by curiosity or resentment I was unable to ascertain."

It seems strange and unnatural that so delicate a bird and one so highly colored should frequent localities where periods of low temperature are common. Yet the Broad-tailed Hummingbird prefers high elevations and has been known to nest at an altitude of eleven thousand feet, and it seldom breeds at places lower than five thousand feet.

The males leave for their winter homes very early in the season. Usually this migration takes place very soon after the young birds leave their nests. Mr. Henshaw attributes this movement of the males to the fact that their favorite food plant, the Scrophularia, begins to lose its blossoms at this time. He says: "It seems evident that the moment its progeny is on the wing and its home ties severed, warned of the approach of fall alike by the frosty nights and the decreasing supply of food, off go the males to their inviting winter haunts, to be followed not long after by the females and young. The latter, probably because they have less strength, linger last, and may be seen even after every adult bird has departed."

Though the flight of all hummingbirds

FROM COL. CHI. ACAD. SCIENCES.

467

BROAD-TAILED HUMMINGBIRD.
(Selasphorus platycercus.)
Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

is rapid, that of this species is unusually so. During the breeding season, or at least while mating, the flight of the male is accompanied by a loud metallic noise. This is only heard when the bird is rapidly flying and not when it is hovering over flowers. Mr. Henshaw suggests that this sound may be "analagous to the love notes of other birds." Though he saw "many of these birds in the fall, it was only very rarely that this whistling note was heard, and then only with greatly diminished force." He believed that the sound was produced at the will of the bird and by means of some peculiar attenuation of the outer primary wing feather. The nesting places of many of the hummingbirds, as well as that of the Broad-tail, may frequently be located by the peculiar perpendicular flight of the male. They will frequently fly as high as one hundred feet immediately above the vicinity of the nest, repeating the performance several times before alighting on some perch. The female is a faithful mother and will often remain on her nest until an intruder is within a few inches. The nest, though sometimes placed on large branches, is usually built but a few feet from the ground in low bushes or boughs that overhang water.

In their migrations southward the Broad-tailed Hummingbird is frequently found in company with the sufous-backed species, for which it shows an especial animosity. Speaking of these two species, Mr. Henshaw says: "The beds of bright flowers about Willow Spring, in the White Mountains, Arizona, were alive with them in August, and as they moved swiftly to and fro, now surfeiting themselves on the sweets they here found so abundant, now fighting with each other for possession of some such tempting prize as a cluster of flowers, their rapid motions and the beauty of their colors intensified by the bright sunlight, conspired to an effect not soon to be forgotten."

A BIRD THAT HUNG HIMSELF.

Near the gate of our garden stands a small apricot tree which is only about six feet in height. Last year a long twine string became entangled in this tree. One day when I went to the garden I noticed a blackbird hanging in this string, about two feet from the ground. On examination I found that the string was closely wrapped about his neck several times, and that he had been choked to death by it. He had evidently tried to secure the string for his nest, and probably had several times started to fly away with it, only to find that the other end of it was fast.

There are usually high winds in Kansas during the Spring months, and these may have helped to entangle the unfortunate bird. It is certain that in some manner he had snared himself, and in attempting to fly had jerked the cord tight about his neck. There he hung, a martyr to his own energy and ambition; and somewhere his mate mourned for the partner who had gone from her never to return. MARY MCCRAE CULTER.

WINTER MEMORIES.

Two little twittering sparrows
  Shivering under the eaves,
Watching the slanting raindrops
  Pattering over the leaves.

Chilled to their poor little marrows,
  Though feathered in winter array,
For cold blows the wind o'er the housetop
  And bitter and bleak is the day.

"You two little balls of brown feathers!
  You chattering he and she!
Of what are you thinking, my pretty ones,
  As you nestle close under the lea?"

"Shall we tell you," they twitter in chorus,
  "Our thoughts in this sharp winter air,
Through which the chill ice drops are falling
  O'er treetops so wind-torn and bare?

"We remember our love in the spring time—
  Ah, life to us then was so dear,
As we drifted through days joy-laden,
  And nights filled with moonbeams so clear.

"We remember the sunshine of summer,
  When the hours floated by like a dream,
And the air was alive with bird-music
  And the world was a shimmer of green.

"We remember, too, winter is fleeting,
  Though now it is snow-bound and drear;
But sometime the sunshine will loosen
  The ice chains and spring will be here.

"We remember"—the little heads quiver
  And the voices sound drowsily deep,
As they come from 'way down among feathers;
  "We remember"—a pause—"then we sleep."

—Alberta A. Field.

SOME OF OUR WINTER BIRDS.

IN EASTERN MASSACHUSETTS.

One of our most interesting winter birds and (with the exception of the English sparrow) perhaps the commonest, is the little black-cap chicadee. He is frequently seen in one's orchard and around the door, and a stroll into the woods will reveal him at any time. He may be easily distinguished by his jet black cap, his bluish drab back and wings, and a yellow tinge on his downy breast. Cedar trees are a special delight of his and, in the winter season, he may be found in nearly every grove of these evergreens. As one walks along through the woods, he is attracted by their notes, usually the simple, cheerful "chic-a-dee-ee e e," varied with squeaks and chirps, or if it be in February or March, he may hear a beautiful whistle ("pee-a-wee-a"), and possibly catch a pretty warbling song. They are always lively and cheerful and on a gloomy winter day they cause one to forget everything but them and their pleasant notes. They feed principally on berries and seeds, such as can be found in cold weather when the ground is covered with snow. But our little friends are seldom alone; as almost constant companions they have the nuthatches, snowbirds, tree sparrows and goldfinches.

Another very common cold weather bird is the slate colored snowbird or junco. Bluish slate above and grayish below, with some white tail feathers which show as he flies, he is a pretty sight to behold when one starts a flock of them from some frozen swamp or meadow, where they feed upon seeds and berries. They utter a loud chirp when you disturb them in the winter time, and as they hop about keep up an incessant twittering, which are the only notes you will hear from them, unless you are lucky enough to hear their song which they seldom sing before starting for their summer homes. When it is stormy or severely cold they come up to one's door and eat bread crumbs and other things which may be thrown out. They are real friendly and will come quite near to you, and a man once told me that the reason for this was blindness on the part of the birds, and even as he spoke one of the birds flew to a nearby fence and, cocking his head, looked my informer over as if to give him the lie. John B. Tabb has written a short poem, which nicely describes him:

> When snow, like silence visible,
> Hath hushed the summer bird.
> Thy voice, a never frozen rill
> Of melody, is heard.
> But when from winter's lethargy
> The buds begin to blow,
> Thy voice is mute, and suddenly
> Thou vanishest like snow.

The tree sparrow, one of our most interesting sparrows, is another bird who does not fear the winter winds and storms. Although he carries the name of tree sparrow, he is most emphatically a bird of the ground, and may be seen during the winter months in almost any remote patch of plowed ground where there are old weed stalks for him to eat. They are especially addicted to old tomato fields and seem to delight in the seeds of this plant. This sparrow looks like a large chippy, our door yard neighbor of the summer months, excepting that he has distinguishing white bars across his wings. They travel in large flocks, and where one sees a few of them scratching in the snow, a step too close will scare dozens of them away. They associate considerably with snowbirds and where there are members of one family you will most always find the others either with them or close by.

One of our prettiest winter birds is the downy woodpecker, his glossy black and white, with the bright red spot on his head, showing up strongly from some tree trunk, where he raps for insects, as he goes up, propping himself with his tail as he works. One notices him by hearing his rapping on a branch or his loud note, which he utters frequently. He delights in boring holes in trees and, especially in the spring, he drills out complete nests which he probably has no intention of ever using. The hairy woodpecker has

almost precisely the same habits and colors as the downy, and differs only in size. He, also, is one of our winter residents, but not so commonly as the other.

The flicker or yellow hammer is another woodpecker that is with us in winter as well as summer. He varies somewhat from the rest of his family in habits, in that, he feeds considerably on the ground, consuming a large number of ants. He is quiet during the winter, but his loud and cheerful notes are one of the first bird songs of spring.

A bird which resembles the woodpecker in his method of feeding, is the brown creeper, a pretty little brown bird, with a long curved bill and long sharp claws, who spends most of his time in climbing trees. Unlike a woodpecker, he goes up the trunk by going spirally around it, thus going over the whole tree before he flies to the next one and repeats the operation. The color of his back closely resembles the bark of a tree, and when disturbed he will sometimes crouch close to the tree where it is almost impossible to see him. In the spring, before departing north to breed, they often sing their pretty tune to us, which, however, we are lucky to hear. In the coldest weather they are frequently seen on trees by the wayside, and I have seen them on Bolyston street, Boston, as busy and contented as ever.

The nuthatch is another bird which climbs, and, unlike either the woodpeckers or creepers, he goes down the tree head first, instead of backing down, and for this reason has been nicknamed "Devil Downhead." There are two nuthatches which are fairly common during the winter months, the white-breasted and the red-breasted. The former more commonly frequents orchards and the roadside, while the latter prefers to frolic, with the chicadees, among the evergreens. They seldom stay with us in the summer, usually nesting farther north.

The goldfinch is also a regular winter visitor; but at this season he has none of his bright colors of the summer time; but is a plain little olive green bird, with dark wings and a gray breast. They feed considerably on thistles, but when the snow falls they take whatever berries they can find. I remember seeing four or five of them, one day two winters ago, coming up and feeding upon the berries of a honeysuckle vine near my window, and at another time I saw them eating with chicadees in some cedars.

Cedar birds, although they do not stay with us any length of time, may be seen at different periods during the winter. They are very pretty birds, being brownish drab above and sulphur yellow below, while the wings are marked by spots of bright red. They travel in very large flocks and soon have one locality completely cleared of food, when they depart elsewhere. One is first attracted by their peculiar lisping notes, which, coming from so many throats, make quite a noise, and upon looking up, he will see them perhaps in flight or more probably roosting on the branches of some elm or oak; or flitting about a cedar, stripping it of its berries. They are also great lovers of cherries, and when this fruit is ripe they may be seen in large numbers in some orchard.

A journey into the woods on a cold winter day may reveal to one a flock of small birds, which have the appearance of a lot of sparrows which had been dyed purple, the colors of the sparrow plainly showing, beneath the purple tinge or wash on their backs and heads. These are lesser redpoll linnets. Very hard working little birds, that usually delight in the arctic regions, we see them only when the severest cold drives them south. They fly in very large flocks, and Miss Blanchan says of them, "First, we see a quantity of dots, like a shake of pepper, in the cloud above, then the specks grow larger and larger, and finally the birds seem to drop from the sky upon some tall tree that they completely cover—a veritable cloudburst of birds."

The red crossbill is a similar bird to the redpoll, but is larger and has the two mandibles of his bill crossed, by the means of which he extracts the seeds from the pine cones. We only see him in the coldest winters, but then he is very tame and may allow one to pick him up, and he has even been known to stay in a cage without a murmur.

These are all our important winter birds, but the robin and bluejay might be mentioned although they are more birds of the summer than winter.

WINTHROP SMITH.

FROM COL. CHI. ACAD. SCIENCES.

468

BROAD-WINGED HAWK.
(Buteo latissimus.)
½ Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

THE BROAD-WINGED HAWK.

(*Buteo latissimus.*)

And up through the rifled tree-tops
That signaled the wayward breeze
I saw the hulk of the hawk becalmed
Far out on the azure seas.
—James Whitcomb Riley, "A Vision of Summer."

The Broad-winged Hawk has a wide range, including the whole of North America, east of the great plains and extending from New Brunswick and the Saskatchewan region on the north to Northern South America on the south. It nests throughout its range within the borders of the United States.

Its confidence in man is not surpassed by that of any other hawk. Dr. Fisher says that "of all our hawks this species seems to be the most unsuspicious, often allowing a person to approach within a few yards of it, and when startled flies but a short distance before it alights again." As a rule it is a very quiet bird, but during the nesting period it is fully as noisy and demonstrative as are many of the other hawks. If disturbed while on its nest its shrill call notes will soon attract its mate, when both will continue noisily complaining till the intruder retreats. Though solicitous for their eggs or young, they will never attack a person. It is said that "for days after they have been robbed these birds will utter their complaints when anyone approaches their homes." They are good parents, both sexes assisting in the care of the eggs and young.

Not infrequently this Hawk will sit for hours on the dead top of a tall tree at the edge of a forest, and with its body erect and motionless will often seem almost a part of the tree. Its food is usually procured on the ground, and it is near the ground or among the denser growths of the forest, where it may find insect larvæ, that it is more often seen.

The Broad-winged Hawk may truthfully be called a friend of the agriculturist, for it seldom feeds on bird life of any kind, but rather upon mice and other rodents, toads, frogs and insects.

Dr. Fisher, in his valuable work, "The Hawks and Owls of the United States," says: "The only act of the Broad-winged Hawk which seems injurious to agriculture is the killing of toads and small snakes, the former of which are exclusively insect eaters, the latter very largely so. In one respect its enormous value ranks above all other birds, and that is in the destruction of immense numbers of injurious larvæ of large moths, which most birds are either unable or disinclined to cope with." In the examination of stomachs of sixty-five of these Hawks Dr. Fisher obtained the following results: Two contained small birds; fifteen contained mice and thirteen other mammals; in eleven the remains of reptiles, and in thirteen batrachians were found; thirty contained the remains of insects, two earthworms, four crawfish and seven were empty. The results were surely in favor of the bird. Well may the farmer listen to the words of Alexander Wilson:

"Kill not thy friend, who thy whole harvest shields,
And sweeps ten thousand vermin from thy fields."

The poultry yard is safe from the depredations of these quiet birds, which, though sluggish and heavy in flight, can move with great rapidity and soar high in the air if they so desire. Even the small birds in the woods seem to consider them to be harmless, for they give them but little attention. When this bird does

attack small birds it is either, as a rule, when they are very young or injured in some manner.

Its nest is usually made of sticks and twigs and lined with soft fibrous strips of bark, leaves and feathers that fall from the breasts of the setting birds. The nests are placed in either evergreen or deciduous trees, and seldom more than thirty or forty feet from the ground. They are frequently much lower and occasionally in the tops of very tall trees. They have been known to use the deserted nests of other birds, especially that of the crow, which is nearly as large as their own structure.

Dr. Fisher says that one of its notes quite closely resembles that of the wood pewee. Another writer says that "their call note is a peevish "chee-e-e-e," prolonged at pleasure and uttered in a high key. However, to fully appreciate their shrill note of complaint it must be heard."

THE BIRD'S COMPLAINT.

Great Nature, lend an ear while we,
The feathered fowls of air,
From mead and furrow, bush and tree,
From pool and mountain, shore and sea,
With one accord pour forth to thee
Our earnest cry and prayer.

From lime and net, from gin and snare,
And from those vile decoys
That slay their thousands unaware,
We pray thee save us, and declare
Thy wrath against what man soe'er
Such evil means employs.

Chasten, correct and scourge the boys
Who count it nobly done
To turn to grief our marriage joys,
To take our precious eggs for toys,
And bear away with mocking noise
The spoil so foully won.

But most from men that use the gun,
That engine of ill scope,
For refuge unto thee we run;
They march to slay us in the sun,
And through the dark, which others shun,
Their murderous way they grope.

Lastly, we pray thee, on the Pope
Prevail to let us be;
We would not hang him in a rope,
And have as good a right, we hope,
Unstrangled under heaven's high cope,
To live our lives as he.

—Henry Johnstone.

CALIFORNIA POPPIES.

A flower of the South and the Sun,
Sown upon limitless plains;
Fed by the death of the summer grasses,
Watered by winter rains.

When the wild spring streams are running,
She raises her head and cries,
"Blow off my emerald cap, good wind,
And the yellow hair out of my eyes!"
And a fair fine lady she stands,
And nods to the dancing sea,
O the rose you have trained is a lovely slave,
But the wild gold poppy is free!

Camilla K. von K.

Spring in California—soft, warm, full and bounteous. Birds twittering and building nests everywhere.

In February the poppies bloom in splendor, and no season of the year is so beautiful, so radiant with glory as the poppy time. Coming after a spell of rainy weather, when the mists have lifted from the face of nature, they usher in the long summer.

In California the interest centering in the poppy is universal, and it is the most beautiful of California's flora. It is the favorite flower, being the State flower, suggestive in color, divine in inspiration and poetry, besides the precious gold and orange to be found in this land.

The naturalist Adalbert von Chamisso arrived at San Francisco in 1816 on the ship Rurick. Seeing the poppy for the first time, he christened it Eschscholtzia (esh-sholts-i-a), after Herr Eschscholtz, his friend and companion of the ocean journey. The Spanish people call it El oro de copo (the cup of gold).

This poppy grows in portions of Oregon, Arizona and Mexico, but in California it has a beauty such as you can find nowhere else.

They grow about one foot high. The cups of gold rest on slender, graceful stems; the foliage delicate and olive green in color. This royal poppy is rich in coloring, cool and refreshing in the midst of tropical heat. It is one of the most characteristic and beautiful features of California's scenery. Associated with it are sunny skies, beauty, sea breezes and waving palms.

Under the sun of a bright day the scene is like an Italian landscape—a blue sky without a cloud. The eye wanders here and there to the gold spread far and wide, and the question rises, Was there ever such flowers as these? Myriads of rich, gorgeous, brilliant poppies nod, lean, dance and swing their dainty cups of gold in the breeze. A mass of tossing gold, sheets of gold fire running up the valley, hill slopes and mountains. The pasture, mesa and uplands are all aglow. Poppies everywhere, found along the seashore in great patches, by the roadside, hid in the fence corners, in the green grass, at the edge of the woods, in the deserts and waste places. They appear like unfurled banners of a victor army, like waving billows in the breeze, like a golden sea, rippling against a blue horizon.

They are the flowers around which the tourists linger, and they go into raptures over them. Gathered by armfuls, they are carried to hotels and pressed in books, then taken East, as souvenirs of this sunny land.

On "Poppy Day" the desks in the schools, the tables and mantels in the hotels are decorated with bouquets of the golden blossoms.

Children worship them in their delight and greet one another with "The poppies are in bloom!" then scamper off by dozens to the mesas, where they deck their hair with poppy garlands and race to and fro like butterflies, wading knee-deep in poppy dust of gold.

Above their happy voices the songs of the meadow larks can be heard, clear, mellow and thrillingly sweet.

A golden spell lingers around the scene, an influence that penetrates the soul.

Clara Hill.

QUARTZ.

The crypto-crystalline (obscurely crystalline) varieties of Quartz are many. The following may be named as the most important: Chalcedony, carnelian, sard, chrysoprase, prase, plasma, bloodstone, agate, onyx, sardonyx, jasper, basanite, flint and hornstone. The distinctions between the different varieties are loose and are differently stated by different authorities. Some class agate, onyx, sardonyx, plasma and carnelian together as varieties of chalcedony, while others consider chalcedony a simple variety. The chalcedonic varieties of quartz agree in having a fibrous structure and in being somewhat softer (hardness $6\frac{1}{2}$) and somewhat lighter (specific gravity 2.6) then crystallized quartz. They also break with more difficulty than quartz, being very tough. The varieties differ among themselves, chiefly in color.

Common chalcedony has a waxy luster and is usually translucent rather than transparent. The transparent forms are known as "oriental," the translucent as "occidental" chalcedony. Common chalcedony has little color, shades of gray and blue being the most common, although other tints occur. It usually presents rounded surfaces which have grape-like, kidney-like or stalactitic forms. It occurs coating other rocks or minerals or lines cavities or fills veins and clefts. It is never, so far as we know, deposited in any other way than by percolating waters. At Tampa Bay, Florida, the waters containing chalcedony have penetrated corals and preserved them, often giving forms showing the shape of the coral outside and a cavity within. Throughout the "Bad Lands" of the West, clefts in the hills are often filled with sheets of chalcedony varying in thickness from that of thin paper to nearly an inch. These chalcedony veins ramify in all directions and often extend for many rods without interruption.

When the chalcedony is penetrated by branching forms of manganese or iron oxide the forms known as "mocha stones" and "moss agates" are produced. These are not due to vegetation any more than the similar forms of frost on our window panes. They are purely mineral in their origin. Moss agates are found in numerous localities in the States of Utah, Wyoming, Colorado and Montana. In the opinion of Mr. George F. Kunz "no stone that is used in jewelry in the United States is cheaper, more beautiful or more plentiful than the moss agate." The best occur as rolled pebbles in the beds of streams. The name, "Mocha stone," sometimes applied to moss agates is either due to the fact that those first used came from Mocha in Arabia, or it is a corruption of the word moss agate. The finest moss agates now known come from India. A white variety of chalcedony containing minute blood red spots is known as St. Stephen's stone. Chalcedony was formerly used much more and more highly prized than at the present time. It was especially employed for seals and rings, but also for plates, cups and vases. These were often engraved in the most elaborate manner, the hardness and toughness of the stone making it well adapted for this purpose. The sentiment of the stone is: "A disperser of melancholy." The name chalcedony is from Chalcedon, a city in Asia Minor, where the original chalcedony was found. This mineral was probably not like our modern chalcedony, however, being more probably a green quartz. This chalcedony is mentioned as one of the foundation stones of the Holy City in the Book of Revelations.

Carnelian is a red variety of chalcedony, sard a brown variety. All gradations between these shades of course occur, those of the reddish cast being the most common. The most highly prized color for carnelian is a deep blood red,

LOANED BY FOOTE MINERAL CO.

QUARTZ (obscurely crystalline.)

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

Bloodstone, polished (India.)
Tiger Eye, polished (South Africa.)

Chrysoprase, polished (Arizona.)
Agate and Carnelian, polished (Lake Superior.)

Jasper (Germany.)
Ribbon Jasper, polished (Siberia.)

appearing darker red in reflected light. The lighter red and yellowish shades are less desirable, stones of these shades being known as "female carnelians," while those of the darker shades are known as "male" carnelians. The colors are due to oxides of iron and can sometimes be changed by heating. Thus the yellowish and brownish carnelians being colored by iron hydroxide can be changed by heating to red, the water being driven off and iron oxide left. The heating may be done in the sun or by some other slow means. Even olive green stones are changed in India to red by this process. The color may also be introduced artificially by allowing the stones to lie in a mixture of metallic iron and nitric acid, or of iron sulphate for a while. In this way the iron salt needed for the coloring matter can be absorbed by the stone and this is changed afterwards to oxide by heating. The best carnelians come from India, but good stones are also obtained in Siberia, Brazil and Queensland. Carnelians are cut usually in oval and shield-like shapes and were much employed by the ancients for intaglios. They believed them to have the power of preventing misfortune and they were much worn as charms.

Sard of typical brown color is much rarer than carnelian and possesses a high value. In other respects it is like carnelian. The sardius mentioned in the Bible as forming one of the stones of the High Priest's breastplate was undoubtedly a carnelian. The name was derived from Sardius, a city of Lydia whence fine carnelians are obtained. The name carnelian is according to some authorities derived from the Latin word caro, carnis, flesh, and refers to the color of the stone, or according to others it is from the Italian word carniola which has the same meaning.

Chrysoprase and Prase are terms applied to an apple green to bright green chalcedony or compact, jasper-like form of quartz. Some authorities, however, call the green chalcedony plasma and restrict the term chrysoprase to the green compact quartz. The terms cannot be accurately distinguished. Most chrysoprase now in use comes from localities in the province of Silesia in Germany, where it occurs in thin layers and veins in serpentine. The green color here is due to nickel oxide which is present in the stone to the amount sometimes of one per cent. The first discovery of the stone is said to have been made by a Prussian officer in 1740. The stone was especially fancied by Frederick the Great so that he had two tables made of it and used it frequently in mosaics. The color fades with light and heat, but it is said can be restored by burying the stone in moist earth for a time. Beautiful chrysoprase comes from India and there are a few localities in our own country where it is found, it being usually associated with nickeliferous deposits. The name chrysoprase comes from two Greek words meaning golden leek and refers to the color of the stone.

Plasma, as already stated, is a name applied to green chalcedony, or by some to green jasper. The name comes from the Greek for image and shows that the stone was largely used for seals and other engraved work. Most of that known at the present time comes from India and China.

Bloodstone is a variety of plasma containing spots of red jasper looking like drops of blood. Another name for bloodstone by which it was chiefly known by the ancients is heliotrope. This name is derived from two Greek words meaning "sun turning" and refers to the belief that the stone when immersed in water changes the image of the sun to blood red. The stone was often used by the ancients for carvings representing the head of Christ, and one fine specimen of such work may be seen in the Field Columbian Museum. The ancients had a tradition that the stone originated at the crucifixion of Christ from drops of blood drawn by the spear thrust in his side falling on a dark green jasper. The stone takes a beautiful polish. To be of the best quality it should have a rich dark green color and the red spots should be small and uniformly distributed. The supply is obtained almost wholly from India, especially from the Kathiawar Peninsula west of Cambay, whence agate, carnelian and chalcedony are also obtained. Fine examples have also come

from Australia and a few from Brazil. In present usage bloodstone is the "birth stone" of the month of March.

"Who on this world of ours their eyes
In March first open shall be wise,
In days of peril firm and brave
And wear a bloodstone to their grave."

Agate was described in the June number of this magazine.

Onyx and sardonyx are varieties of agate in which the layers are in even planes of uniform thickness. This structure enables the stone to be used for engraving cameos. As is well known, these are so made that the base is of one color and the figure of another. This art of making cameos reached a high degree of perfection among the Romans and many superb examples of it have come down to us. The word onyx means a nail (finger nail) and refers to some fancied resemblance, perhaps in luster, to the human nail. Sardonyx is a particular variety of onyx in which one of the layers has the brown color of sard. Other kinds of onyx are those known as chalcedonyx and carnelionyx in reference to the color of the intervening layers. So-called Mexican onyx is composed of quite a different mineral from the onyx here considered, it being made up of calcite rather than quartz. Mexican onyx can be scratched easily with a knife while quartz onyx cannot. Mexican onyx has, however, the banded structure of quartz onyx and it is in allusion to this undoubtedly that the name has been applied. A sardonyx upon which Queen Elizabeth's portrait was cut constituted the stone of the famous ring which she gave the Earl of Essex as a pledge of her friendship. It will be remembered that when the Earl was sentenced to death he sent this ring to his cousin, Lady Scroop, to deliver to Elizabeth. The messenger by mistake gave it to Lady Scroop's sister, the Countess Nottingham, who being an enemy of the Earl's did not deliver it to the Queen and the Earl was executed. On her deathbed the Countess confessed her crime to the Queen, who was so infuriated that she shook her, saying "God may forgive you, but I cannot." The onyx is the emblem of conjugal felicity and by some is made the "birth stone" of the month of July. It is one of the stones prescribed for the ephod of the Jewish High Priest.

The sardonyx was supposed by the ancients to be a different stone from the onyx. To it was ascribed the property of conferring eloquence upon its wearer. It is mentioned in Revelations as one of the stones forming the foundations of the Holy City. Onyx and sardonyx which come from the Orient are esteemed of much higher value in trade at the present time than those prepared in Germany. There seems to be no good reason for this, however, as the latter can be so skillfully made that it is impossible to distinguish them from the Oriental stones.

Jasper is a name which includes in general nearly all varieties of impure opaque colored crypto-crystalline quartz. In color it may be red, yellow, green, brown, bluish and black. To many of the pebbles found on almost any sea or lake shore or in the beds of streams the name jasper may properly be applied. If it occurs banded, that is, in stripes of different colors, it is known as ribbon jasper. The different colors of jasper are due to the different impurities it contains. These may be clay, iron oxides or organic matter and at times reach a quantity as high as twenty per cent. The color often varies irregularly in a single stone, giving different effects and sometimes imitating paintings. Jasper which can be used in the arts is very widely distributed. Good red jasper is obtained in Breisgau and near Marburg in Germany. Much of the brown jasper comes from Egypt. What is known as "Sioux Falls jasper" from Sioux Falls, South Dakota, is chiefly of a brown color. This stone was highly prized by the Indians for its color and is the "jasper" referred to by Longfellow in Hiawatha:

"At the doorway of his wigwam
Sat the ancient Arrow-maker
In the land of the Dacotahs,
Making arrow-heads of jasper
Arrow-heads of chalcedony."

The yellow jasper used for mosaics comes chiefly from Sicily, but as good could be obtained in many places in our own country. The green jasper of the present time is obtained chiefly in the Urals and is to a considerable extent worked there into ornamental pieces. The

Chinese prize green jasper highly, the seal of the Emperor being made from it. Some jasper of a bluish shade is found in Nature, but that of a deep blue tinge is always artificially colored by Prussian blue. It is then sometimes known as "false lapis," that is, false lapis lazuli. Ribbon jasper is found in Saxony, but chiefly comes from the Urals. The qualities which make jasper of use in the arts are its color, opacity and capacity for taking a polish. At the present time it is not much used except for mosaic work and for small boxes, vases and dishes. The ancients, however, prized it highly and used it extensively. It is one of the stones prescribed in the Book of Exodus to be worn in the ephod of the High Priest and also forms one of the gates of the Holy City as described by St. John in Revelations. It is probable that the jasper referred to in these instances was of a dark green color, as this was the tint most prized in early times. Green jasper was also called emerald in some instances. The banded varieties were much used for cameos, specimens of which are still extant. By taking advantage of the colors of the different layers, colored objects were made, such as one which shows the head of a warrior in red, his helmet green and breastplate yellow.

Basanite is also known as Lydian stone or touchstone on account of its use for trying the purity of metals. Its value for this purpose depends on its hardness, peculiar grain and black color. Different alloys of gold give different colors on the stone which one soon learns to recognize, and jewelers become very skillful in judging of the fineness of gold by this test. Also if an object is plated, by giving it a few strokes on the stone the different color of the gold and base will be revealed. It is simply a black variety of crypto-crystalline quartz, differing from jasper in being tougher and of finer grain and from hornstone in not being splintery.

Flint is likewise an opaque quartz of dull color. It differs from jasper in breaking with a deeply conchoidal fracture and a sharp cutting edge. It is also often slightly transparent and has a somewhat glassy luster. These properties have led to its extensive use by the Indians and by nearly all primitive peoples for the manufacture of weapons and implements. Hornstone is more brittle than flint and has a splintery rather than a conchoidal fracture. A number of other subvarieties of crypto-crystalline quartz occur, but they are not important.

OLIVER CUMMINGS FARRINGTON.

MIDWINTER.

The air is like a beryl, clean and clear,
  Intensified by gleaming points of blue.
Sharp-outlined, distant sounds come ringing near
  And crisply pierce the brittle silence through.

The sturdy trees that yester-eve were gray
  In dim and foggy veils, and half effaced
By winter rain that compassed them, to-day
  Arise like knights in crystal armor laced.

The stiff, brown-fibered weeds beside the walk
  Have pinned, with each dull spike, a shivered star.
An icy chime is rung from every stalk
  To wandering step that clashes them ajar.

The wood is bright as when the summer lost
  Her sun-gems in the deep, soft shadow-seas—
Only the light is dagger-edged with frost,
  And breaks in spangles on the ice-mailed trees.

—Hattie Whitney in The Ladies' World.

A CATASTROPHE IN HIGH LIFE.

Tertius, as his name signifies, was the third Maltese cat to occupy a very warm place in the hearts of a certain pet-loving family that lived on a quiet, tree-shaded street in a beautiful Eastern city.

His predecessors were both noted for their wonderful sagacity and great achievements, so he felt that he must improve all his opportunities if he was to keep up to their high standard. Just how they had obtained their reputation he did not know, and perhaps it was this ignorance that caused him to make his fatal mistake.

The beautiful house in which he lived had a large veranda on one side, over which ran a grapevine, and in this grapevine a pair of robins, most unwisely, decided to build their nest.

"It is a very beautiful spot," said Mrs. Robin.

"Yes, and that arrangement in the center there will be splendid to lay the foundation on," replied Mr. Robin.

"It is so picturesque," returned Mrs. R., in a rapture of delight.

"And there will be such a nice shade for you, my dear, when the leaves are out," added the thoughtful husband.

"It is a much finer situation than Mr. and Mrs. English Sparrow have for their nest in the eaves up above. Don't you think so, Rob?"

"Indeed I do, wifey; but we must to work, for the morning is advancing. Now, you stay here, while I fly off and get the material."

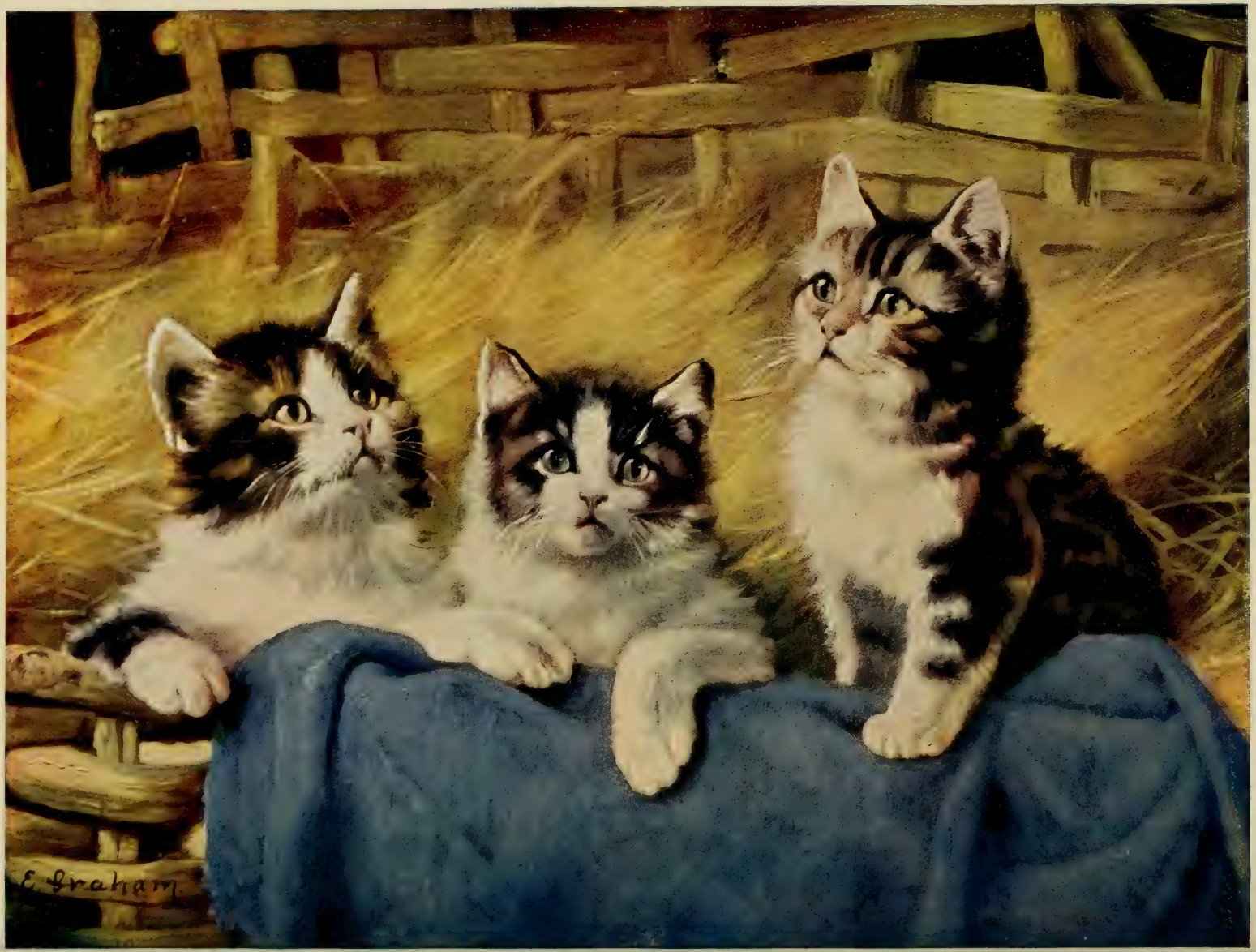
In a very few days as pretty a little nest was in the spot selected as you would want to see. Mr. Robin had brought all the material, while his helpful little wife had constructed the nest.

All this time their movements had been watched by the large, admiring, but greedy eyes of the ambitious Tertius, and one morning the chance he had so patiently waited for came. Mr. Robin started out, thinking in his kind little heart that he would get "little wifey" a particularly large and tasty worm for her breakfast, and he was so intent in scratching in the newly turned garden for it that he did not see the slyly, softly creeping Tertius. One bound, and poor little Rob was caught. He screamed, he scolded, but all to no purpose. Now was Tertius proud. He would carry his prize to his mistress, and she would surely say that his skill and prowess was far beyond that of either of his illustrious ancestors. So, thinking, with arched back and curling tail, he hastily gained the house and at once carried his prize to his mistress' room. But alas for his well-laid plans! Alas for the praise he had looked for! Instead, to his intense surprise and anger, he was greeted with a cry of pain and alarm. The mistress who should have praised rated him well, the hand that should have stroked his smooth coat wrenched his prize from him. In his anger he tried to scratch her in return, but she had been too quick for him, and Robin was saved. Tenderly he was laid in a bed of cotton and placed on an upper veranda, once more in the sweet, balmy air. Cautiously he lifted his head, and as no shining green eyes or sharp paw were to be seen, ventured to hop to the edge of the basket in which his kind preserver had placed him. One more look around and he stretched out his wings and soared away.

"Oh, my dear Rob! I heard your cry. Where have you been? Do tell me all about it!" exclaimed Mrs. Robin on Mr. Robin's return, and he, in a most graphic manner, granted her request; but, as we already know all about it, we won't stay to listen.

As to Tertius, he has decided that to win his way to fame he must confine himself in the future to a war on mice.

M. Leila Dawson.



COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

THE DOMESTIC CAT.

In the old, old writings of the sacred Sanskrit language, that ancient language of the Hindoos, nearly two thousand years ago reference was made to the Domestic Cat. And so we know that Cats existed long ago and are a very ancient animal. But by means of pictures we are able trace their origin to still earlier times, for the Egyptian monuments abound in pictured Cats, and, stranger yet, in Egypt are found mummies of both the domestic and common jungle Cat. How very important it must have been considered! Think of burying the body of every forlorn, luckless Cat, and then realize the pains taken, not only to give it a burial, but to preserve it for ages to come; and this the Egyptians did, for doubtless it was to them the most sacred of all sacred animals.

Herodotus says that when one of their houses was on fire they first thought of saving the Cat, and afterward considered the matter of putting out the fire; also when a Cat died they cut off their own hair as a sign of mourning. When a person unintentionally caused the death of one of these animals he forfeited his life. We can readily imagine that small boys did not find amusement in chasing and plaguing stray Cats at that period of the of the world's existence.

While we really do not absolutely know where the ancestors of our modern Cat were found, it is the general opinion that the Egyptian Cat was the first to be domesticated and that it gradually spread northward and eastward and westward, although the spotted Cats of India may have had a different origin.

In the tenth century the Cat had reached Wales, as laws were recorded fixing the price of Domestic Cats, and also penalties were fixed for their ill treatment and killing. After a kitten caught its first mouse its value was doubled, and a mother Cat was expected to have perfect eyes, ears and claws, to know how to catch mice and how to bring up her kittens properly.

The Domestic Cat is so common an animal that we do not realize how very interesting the study of it may become. First of all, we must remember that our pet kittens belong to that imporant division of animals known as "The Cat Tribe," and which includes such ferocious and feared beasts as the lion, the tiger, the wildcat, the leopard, the panther and many others less common and less generally known.

All of these animals are most symmetrical and graceful; all have the round head set on a stout neck, the limbs of moderate length, the long tail and the soft fur which correspond in general color to its native surroundings. Because they are beasts of prey the teeth are adapted to life-destroying action; the tongue is thick and muscular, with fine, horny thorns which point toward the throat. With these the animal can most beautifully smooth and dress its hair, as well as strip the meat from off the bone when making a meal. The claws, ordinarily drawn up and out of sight, make an effective weapon when the angry animal stretches its paws. On account of its cushioned feet its step is silent and stealthy. All Cats can jump many times their own length, and most species are great climbers. The sense of hearing is most acute, and they see well at short range. The sense of touch is extremely well developed, and the most sensitive organ is the whiskers. A Cat with the whiskers cut off is indeed in a most uncomfortable position; it is at a loss to know what to do. The sense of smell is not very acute.

Our Domestic Cat shares all these qualities with the other members of the Cat tribe, but it has many valuable qualities of its own.

It is much more intelligent than people are willing to concede. It is often compared with the dog, but they are so entirely different that it is an unfair comparison. The dog becomes very dependent upon man, while the Cat has kept a certain amount of individuality and independence through all its generations of domestic life. When a Cat is very much petted it develops an affection for its

master, but otherwise it becomes more attached to the house and locality in which it lives, preferring to return to its old home and live among strangers rather than to follow its owner to a new home.

How remarkable is the fact that no one can cause a Cat to alight except upon its feet, no matter how short or long may be the distance from which it jumps or is thrown! A Cat can also swim, though in the main it abhors the water. Occasionally its great appetite for fish will overcome its dislike of getting wet, and it will jump into a pond and do its own fishing.

Mr. Scheitlin understandingly describes the Cat in the following language: "The Cat is an animal of a high order of intelligence. Its bodily structure alone indicates this. It is a pretty, diminutive lion, a tiger on a small scale. It shows the most complete symmetry of form, no one part of it too large or too small. That its every detail is rounded and beautiful is even shown by an examination of the skull, which is more symmetrical than that of any other animal. Its movements are undulating and graceful to the extent that it seems to have no bones. We value our Cats too slightly because we detest their thievish propensities, fear their claws and love their enemy, the dog, and we are not able to show equal friendship and admiration for those two opposite natures.

"Let us examine the Cat's qualities. We are impressed by its agility, yet its mind is as flexible as its body. Its cleanliness of habit is as much a matter of mental bias as physical choice, for it is constantly licking and cleaning itself. Every hair of its fur must be in perfect order; it never forgets as much as the tip of its tail. It has a discriminating sensibility as to both color and sound, for it knows man by his dress and by his voice. It possesses an excellent understanding of locality and practices it, for it prowls through an entire neighborhood, through basements and garrets and over roofs and haysheds without bewilderment. It is an ideally local animal, and if the family moves it either declines to accompany them, or, if carried to a new residence, returns at the first opportunity to the old homestead; and it is remarkable how unerringly it will find its way back, even when carried away in a sack for a distance of several miles."

Large families are the custom with Cats, for usually five or six kittens are born at one time. As these cunning little objects are totally blind for nine days after birth, the devoted mother Cat must work industriously to properly care for them and especially to preserve them from danger. They must be hidden away from harm, as the father Cat would be perfectly willing to devour them, and would attack them as readily as he would a rat or a mouse. The mother Cat lifts her helpless little ones very tenderly by compressing the skin of their necks between her lips and gently carries them to a place of safety.

While attending to the duties of motherhood the Cat is in a sympathetic frame of mind and will sometimes care for the young of other animals as well as for her own. Mr. Brehm tells us that when a boy he brought a little squirrel, yet blind, to one of his Cats, which accepted the strange child among her own and tenderly cared for it, and after her own kittens had been given away she regarded it with increased affection. They became inseparable companions and understood each other perfectly, though each talked in its own language.

Cats frequently form friendships for other animals, and even dogs and Cats become friendly, in spite of the impression to the contrary.

While living in a large city where yards were small and infrequent, I was the happy owner of a beautiful tree, which stood near the rear of the house. There were many pet Cats in the neighborhood, and all delighted to visit my tree. Undoubtedly some were attracted by the English sparrows which were almost omnipresent among the upper branches, but all enjoyed clawing, stretching and scratching up the friendly trunk. One day a strange kitten appeared, and although smallest and youngest of all the Cats, by its superior intelligence it soon became king among them and ruled them all, causing many a commotion in the previously tranquil group. This young Cat gained entrance to my next door neighbor's house and

made itself at home with an "I am come to stay" air. In fact, it refused to be evicted, and by its determined persistence became a member of the household.

The other family pet was an old pug dog— Jack —cross and uninteresting, but tolerated because he gave some amusement to an invalid daughter of the family. Jack, jealous and annoyed, received the newcomer in the most hostile manner, and the kitten seemed to take special delight in tormenting the dog in every possible way. In fact, the lack of harmony between the pets became so annoying that it was decided to sacrifice the kitten, and it was taken to a remote place. For a number of weeks quiet prevailed in the rear yards of the neighborhood, but in time, to everyone's surprise, the Cat reappeared and refused to be turned away. Its courage and daring won recognition, and again it was received into the family circle. I wondered what Jack would do now that the kitten was restored to favor. About this time business called me from the city, and some time elapsed before my return. On reaching home again, one night I heard the dog crying and whining till nearly morning. I could not imagine the cause, but to my astonishment learned the next day that the dog and Cat had become such firm friends that the dog was perfectly inconsolable when the Cat was absent, and as his kingship had chosen to wander outside that particular night, the dog had mourned for hours. In fact, after causing the family a sleepless night, his master was obliged to rise and punish him before he would cease his cries. Such devotion put to flight all my previous theories of the inborn antagonism between Cats and dogs.

The different varieties of Domestic Cats are distinguished from one another by the difference of color, length of hair or, more rarely, length of tail.

The Cats of India are spotted, those of the Isle of Man are practically tailless, but the European Cats are commonly "tabby," black, white, sandy, tortoise shell, dun, gray or the so-called blue.

The most beautiful of all are the highly prized Persian or Angora Cats, with their long, silky hair and bushy tails.

JOHN AINSLIE.

"CUBBY."

Just a little fluffy ball of fur,
Fawn and brown, and smooth and soft as silk;
Just two cunning little paws of tan,
Velvet-gloved, to dabble in the milk.
Little paws to pat my tired face,
Spring and play, and help me to forget.
Little, merry, restless, tireless feet—
Just a little playful, happy pet.

Just a little yielding, graceful form,
Cuddled softly down beside my cheek;
Just two little tender, fawn-like eyes,
Looking all the love they cannot speak;
Just a little song of sweet content,
Murmured soft and low beside my ear;
Just a little kitten I have loved—
Not forgotten, and to memory dear.

—Mary Morrison.

SOAPWORT OR BOUNCING BET.

(*Saponaria officinalis.*)

The plant commonly called Soapwort or Bouncing Bet also bears other popular names, many of which are purely local. Some of these are Hedge Pink, Bruisewort, Sheepweed, Old Maid's Pink and Fuller's Herb. It bears the name Soapwort because of a substance called saponin which is a constituent of its roots and causes a foaming that appears like soap suds when the powdered root is shaken with water.

Soapwort belongs to a large group of plants called the Caryophyllaceæ, or pink family. In this family there are about fifteen hundred species. These are widely distributed, but are most abundant in the Northern Hemisphere, extending to the Arctic regions and to the tops of very high mountains. The popular and beautiful carnations and some of the most common plants that grow abundantly in waste places also belong to the pink family. The Soapwort comes to us from Europe, where in some localities it is a common wild flower. In this country when it was first introduced it was simply a pretty cultivated garden plant. However, it lives from year to year and spreads by means of underground stems. It was not very long before it had escaped from yards to roadsides, where frequently large patches may be seen. The flowers are large and quite showy. The color of the petals is usually pinkish white. Blossoming in July, August and September, the Soapwort often beautifies waste places which other plants seem to shun. It is perhaps more generally loved than any other of our old-fashioned garden flowers. It grows luxuriantly without cultivation and seems to quite hold its own even among rank growths of weeds and grass. It is hard to tell what is the significance of the name Bouncing Bet, perhaps the most popular of all the names by which this plant is known.

Alice Lounsberry says: "It was always a mystery to Dickens that a doornail should have been considered so much more dead than any other inanimate object, and it seems also strange that this plant should have suggested the idea of bouncing more than other plants. Dear Bettie does not bounce, nor could she if she would. She sits most firmly on her stem, and her characteristics seem to be home-loving and simple. We are sure to find her peeping through the garden fence."

TURTLE-HEAD OR SNAKE-HEAD.

(*Chelone glabra.*)

The Turtle-head or Snake-head is one of three species that are natives of eastern North America. This plant is well supplied with common names, as it is also called Shell-flower, Cod-head, Bitter-herb and Balmony. The generic name of this flower of the swamps and moist banks of streams is from the Greek word which means tortoise, the name having been given to the plant because of the fancied resemblance between the flowers and the head of a turtle or snake. One may be able, by stretching his imagination, to see this resemblance in the flowers of our illustration.

The custom of giving names to plants that are suggestive of their real or fancied resemblance to various objects of nature, or are indicative of their beneficial or injurious qualities, is as old as history itself. In this way a large number of plants have become associated

471 SOAPWORT OR BOUNCING BET.

(Saponaria officinalis.)

SNAKE-HEAD OR TURTLE-HEAD

(Chelone glabra)

FROM "NATURE'S GARDEN"
COPYRIGHT 1900, BY
DOUBLEDAY, PAGE & COMPANY.

with good or evil spirits, Christian or pagan saints or martyrs, animate nature or some of the phenomena of nature. To the Indian the likeness of the flower of the Turtle-head to the head of a reptile not only gave it its name, but at the same time invested the plant with certain sacred associations by reason of the fact that not only among the Indians of North America, but among the uncivilized peoples in all parts of the world the tortoise has been considered sacred and highly symbolical.

Though commonly found in low altitudes, it is found in moist places in the Adirondacks, even at a height of three thousand feet.

This plant is not rare, and with its upright stem and its rather large and clustered white or slightly rose-colored flowers it is a dignified and beautiful feature of any floral community.

THE POCKET BIRD.

About the middle of May a gaily colored bird from his winter home in neotropical regions visits the United States. His body is bright scarlet, his slightly forked tail and his wings intense black and his bill sea green. The ornithologist names him the scarlet tanager—tanager being a Brazilian word applied to this class of birds. But he is also sometimes called the "pocket bird," because his jetty wings when closed upon his red sides are fancifully thought to resemble pockets. He is also known as the black-winged redbird. It takes three years for his gaudy plumage to become perfect. His mate is clad in green, so that she is easily concealed when on her nest amid the leaves of the swamp oak or some other favorite nesting tree. The nest is shallow and loosely woven, so that the eggs may be seen from beneath. But it is strong enough to hold the young birds securely until fledged. The eggs, three to five in number, are greenish-blue, spotted with brown and purple. The young birds are a clownish looking set in parti-colored robes of scarlet yellow and olive green. The song of the tanager somewhat resembles that of the robin in modulation; but the quality of the song is so soft and wavering that there are observers who call him a lazy bird, too lazy to sing. But others declare that it is worth while to take a long tramp in order to listen to his beautiful notes. Mr. Abbott calls him a "gayly colored blunder" without peculiarity of voice or manner. His song has been translated "Pshaw—wait—wait—wait for me." His call note is "Chirp-chirr."

There are some three hundred and eighty species of tanagers, and they are peculiar to America. They are perching birds and have usually conical bills, triangular at the base, with cutting edges near the tip of the upper mandible: this distinguishes them from the finches, to which they are closely allied. It is said that this genus is remarkable in having no gizzard.

The tanagers feed chiefly on ripe fruits and insects.

The organist tanager of San Domingo is purplish black, with forehead, rump and underparts yellow, and a cap of blue. Its tones are said to be extremely rich and full. But if our scarlet tanager is not so fine a musician as his cousin, if he has no such organ-like tones, yet we could ill spare the blaze of his scarlet coat and the sight of his black pockets, as he sits on the hedge very early in the morning—the rising sun emphasizing his brilliancy. Then he is an early riser I am sure, as I have seen him before four o'clock in the morning. But he has always been silent at that time as if not wide awake yet. In manners he is a most unobtrusive bird. He is rightly entitled to some of the plunder of the fruit trees. For there is no doubt that we owe all kinds of fruit to the agency of birds as seed distributors. Besides, the tanager is very destructive to larvae that injure fruit.

BELLE PAXSON DRURY.

THE BIRDS IN THEIR WINTER HOME. II.

(In the Fields.)

A half day's tramp through the pastures and fields of a Mississippi "second bottom" any sunshiny day from the first of December till the first of March will reveal some of the reasons why this is a veritable birds' paradise in winter. Fields once in cultivation, but now abandoned to sedge and Bermuda grass, cultivated fields, where giant cockle burrs wrestle with morning glory vines for the possession of the soil, tracts of palmlike palmeto and marshy jungles of willows, pampass grass and briars afford attractive feeding grounds by day and safe roosting places by night to myriads of winter visitants. In such places are found abundant supplies of the insects, berries and seeds which this humid, semi-tropical climate produces in great profusion. Good shelter and plenty to eat settle the problem of living for the present for our little feathered friends.

Walk out on these broad savannas about the first of February before a tint of white or pale green has appeared on the chicasaw plum (Prunus chicasa) and take note of the abundance and vigor of bird life before spring has begun to make serious inroads upon it. In the drier parts of these lowlands, especially where stubby plum bushes and haws abound, our old friend the field sparrow meets us with the same innocent, confiding air that we remember as characteristic of him in the region of Lake Erie and Lake Michigan. He is one of the birds that we can talk about in the indicative mood without "ifs" or apologies; the good that he does in disposing of surplus insect life is not offset by tolls levied on our ripest and juiciest fruit; he never goes over to the enemy to plunder those who trust him. Even the robin, whose praises are in everybody's mouth, becomes a pirate when our cherries and mulberries ripen, and we wish he would stay away from our premises till the berry season is over.

The pale red or horn-colored beak of this bird will help us to distinguish him from another, often mistaken for him—the chippy, or chipping sparrow, a bird of the same general appearance and size. Even with the naked eye you can detect differences enough to distinguish the two species. Both are small birds with chestnut or rufous crown caps; the chippy has a patch of black on his forehead and bill of the same color; his brother of the fields wears no black, and his bill, as before stated, is a pale red or horn color. In Central Mississippi, as in parts of Northern Ohio, field sparrows are very numerous, but chippies quite rare.

In the grass or crouched down close to the brown earth and gray weed stems we see another of our friends. With a "chip" he jumps up out of the grass and is away before you can see what particular shade of gray or brown is most conspicuous. However, he doesn't fly far, but suddenly drops into some inviting tuft, spreading out his tail like a fan as he does so, as if on purpose to show you its margin of white. This is the only one of our common sparrows that shows the white feather—the vesper sparrow, or bay-winged bunting. The field sparrow, as one authority says, had better be called the tree sparrow, because of his marked fondness for bushes and shrubs, but both of the former's names fit; he is rightly called the vesper sparrow from his delightful custom of singing his choicest hymns to the dying sun, and bay-winged bunting from the conspicuous patch of bay or rufous on the lesser wing coverts.

Sometimes in company with the vespers we see the slate-colored junco, or snow bird; at other times a gorgeous, distinguished looking sparrow, named from his partiality to these broad, low fields, the savanna sparrow. He is the dandy of this winter resort. His plaid coat and striped shirt eclipse the somber colors of all his cousins. The epaulettes of gold on his shoulders indicate his high rank;

but for all that he is no dude, for he works as hard as anybody to find his own breakfast and enjoys it all the more that he eats his crickets in the sweat of his brow. A simple "chip" is the only remark he makes to us or to his companions as he runs along the cotton rows in quest of food. Ornithologists, however, tell us that up in Canada in his summer home he sings a weak, grasshopper-like song in marked contrast to the musical efforts of his neutral tinted cousin, the vesper.

The fields of broom sedge are the favorite haunts of one of the birds whose cheerful music and winning ways help to make June in the North "the high tide of the year, when all of life that has ebbed away comes rippling back into each inlet and creek and bay." I never see the meadow lark or hear his cheery whistle that I do not smell the blossoming clover and hear the ringing "spink, spank, spink" of the bobolink or catch the subtle suggestion of strawberries that comes floating to my nostrils on the warm June breeze. In a thirty minutes' walk through the sedge I have flushed as many as two or three hundred of these birds. They are called "field larks" by the negroes, who regard them as legitimate game. The lark's whistle—it can hardly be called a song—contains a bit of good advice habitually disregarded by the negroes. They interpret it as "laziness will kill you."

The colored people have an ornithology all their own, in which their own observations are strangely mingled with superstition. They tell us of two kinds of mockingbirds, "de real" and "de French" varieties. The real mockingbird deserves an article all to himself. His winning ways, playful disposition and ability as a singer give him a place second to none among our American birds. I am pleased to see the spirit of Americanism growing in our literature, that conventional allusions to the skylark and the nightingale, birds few of us have ever seen or heard, are becoming rarer and rarer, while those to the robin, the mockingbird and the wood thrush are becoming more frequent. The mockingbird, like other singers, does his best during the courting and nesting seasons, but does not confine his concerts to that joyous time. On warm days in winter he loves to perch in the cedars and give his listeners a sample of what he can do, an earnest of the floods of melody that spring will bring. Balmy air, green of cedar and water oak and bird music disarrange our mental almanac. Even the nodding narcissus contributes to the illusion that it is not February, but May.

The "French mockingbird" is no mockingbird at all, but the logger-headed shrike, or butcher bird. Like some people, he tries to occupy a front seat, even if his music wins for him one of the lowest seats of the choir. A beanpole in the garden, the topmost wire of the fence and the top of a solitary shrub or tree are alike acceptable to him, for it's all one to him if he gets to see all that is going on in his little world. No doubt he does do mischief during the nesting season, when eggs or tender nestlings are easier to find or more acceptable to his fastidious palate than the mice and insects which compose his winter diet. Just now he is a most pleasing bit of decided color, black, white and blue-gray, very refreshing to the eye, amid the browns and grays of last year's vegetation.

When a cold wave comes, what a scurrying takes place! Each winter visitor packs his grip and strikes for the nearest shelter, be it canebrake or swampy jungle, where tall grass and cat-tails above, briars and water below, make a retreat impregnable to assault from the enemy flying through the air or creeping along the ground. If the cold wave continues until the ground freezes the birds suffer. At such times half-starved robins gorge themselves on the berries of the China tree (Melia azederach) and have a general "drunk." They never eat many of the berries unless they are the only provisions obtainable, unless driven to it by stress of the weather, an excuse for drunks that cannot always be truthfully given by the lords of creation. While the silly birds are sitting around trying to throw off the effects of their debauch an enemy comes upon the scene. The negroes take advantage of the robin's disability to manage his own affairs and feast high on roast robin, fried robin, stewed robin, etc., much to the detriment

of next spring's music in Northern fields and orchards.

The warm breath of the Gulf steals in upon our little world and a change comes. The birds remember that they are due in a few days in an Ohio orchard or on an Illinois prairie, so they pack and go. The allurements of a Southern spring, with all its fragrance and charm, do not hold them. Without a goodby they are gone, not to return till once more

"Frosts and shortening days portend
The aged year is near his end."

JAMES STEPHEN COMPTON.

MUSIC-LOVING FELINES.

According to observation, music has power, not only to soothe the savage or the troubled breast of civilized man, but its potency extends to the brute world as well. Among those animals which appear to be charmed by musical sounds, it would seem difficult to find any manifesting a keener delight than the ordinary domestic cat.

The London Spectator some months ago referred to an instance where a cat showed marked pleasure in a whistled tune. This recalled to memory the circumstance of a certain cat, a beautiful creature with black and ecru stripes, whose appreciation of the musician's art awakened in him inordinate emotion. Were he within hearing distance of the piano the eliciting of a few chords was sufficient to beguile him into the parlor. When permitted to walk across the keys he always appeared pleased with his performance. But he was discriminating and exhibited decided preferment for vocal renditions over instrumental. The "Miserere" from "Il Trovatore" affected him more deeply than anything else, and might appear to confirm the theory held by some that the possession of a soul is not limited to the human creation.

Settling himself in front of the singer, he would listen with bated breath and eyes widely dilated. Never would he move a muscle, unless after a prolonged interval in the music, when he would softly approach the vocalist to caress her face and neck with his paw or to smooth her cheek with his own. His coaxings always had the sought for effect, when he would once more seat himself with becoming decorum to imbibe the harmony which seemed to ravish his being.

This is by no means an isolated instance of fondness for musical discourse on the part of cats, though this particular case affords an extravagant illustration of that æsthetic sensitiveness which characterizes probably the whole feline tribe.

S. VIRGINIA LEVIS.

FIRE-FLIES.

The Day, disrobing for her rest,
Delayed to lift the twilight bars;
And o'er them, from the golden West,
Wandered this troop of truant stars.

—Cora A. Matson Dolson, in Lippincott's Magazine.

FROM KŒHLER'S MEDICINAL-PFLANZEN.

SUGAR CANE
(Saccharum officinarum.)

CHICAGO:
A. W. MUMFORD, PUBLISHER

SUGAR-CANE.

(*Saccharum officinarum* Lin.)

Has God then given its sweetness to the cane,
Unless His laws be trampled on—in vain?
—COWPER: Charity, 190.

This highly important plant belongs to the grass family. It is perennial, with thick, succulent, jointed rhizomes, having root tufts at the joints. The stems are numerous, erect, cylindrical, growing to a height of six to twelve feet. Like the rhizome, the stem is jointed, the internodes being, however, much shorter toward the base. The leaves are numerous toward the apex, being deciduous toward the base. The apical tuftlike inflorescence is quite characteristic. The individual flowers are small and unattractive in appearance. One of the remarkable things about the plant is that the fruit never matures. It must be remembered that the plant referred to is entirely distinct from the so-called sugar-cane of the Central States from which sorghum molasses is made.

It is very doubtful whether sugar-cane occurs anywhere in the wild state, at present. Authorities are quite unanimous in expressing it as their opinion that its original home was India. It is a plant that has been under cultivation for many centuries. Alexander the Great, in his invasions of India, found that the inhabitants of that country cultivated and used it extensively as a food article. Theophrastus mentions a "sweet salt" (sugar) which he obtained by evaporating the juice of an Indian reedlike plant, which was perhaps sugar-cane, though there is no conclusive evidence that the earlier Greeks and Romans were familiar with sugar; they employed honey quite universally. The "sweet cane" of Scripture is probably Andropogon calamus aromaticus, or sweet calamus, which was a native of India. It is presumed by some that the cane grown in China was originally native there. The cultivation of sugar-cane seems to have spread very rapidly. It early found its way to Persia and Arabia, and then from Arabia as a center has spread to the Mediterranean districts, Sicily, Cyprus, Spain and Italy. It found its way to Santo Domingo as early as 1494 and to Brazil early in the sixteenth century. At the present time cane is grown in nearly all tropical and sub-tropical countries, the Southern United States producing more than any other country.

There are many varieties recognized by cultivators, differing in color, texture and other minor characteristics.

Since cane does not ripen fruit, it is propagated by transplanting the rhizomes and top portions of stem, and after a field is once planted new crops are permitted to spring up from the old rhizomes, and this accounts for the awful tangle of the famous Southern canebrakes, which figured so extensively in the slave days, when these fields served as hiding places for the fugitive slaves. The ripe cane is cut close to the ground, the leaves stripped off and the tassel cut off. It is then carted to the cane mill and passed between large rollers, which express the juice, which is then clarified by means of lime, animal charcoal and blood. Heat further aids the purifying process by coagulating the albuminous matter, which, mixed with other impurities, rises to the surface as a scum and is removed by means of a special ladle. The lime combines with the free acid present and settles to the bottom. The juice is boiled until it acquires a proper tenacity, when it is passed into a cooler and allowed to crystallize. This sugar is then placed in large perforated casks and allowed to drain for two or three weeks, when it is packed into hogsheads and exported under the name of raw sugar or muscovado sugar. The drainings form molasses. Raw sugar is taken to the sugar refinery and purified by heating with water and bullocks' blood, filtered through canvas bags and finally allowed to percolate very slowly through large cylinders containing freshly prepared, coarse-grained animal charcoal. The filtered liquor is then

boiled by the aid of steam. When sufficiently tenacious it is poured into conical molds, and when solidified the stoppers are removed to allow the treacle to drain off. The loaves from the molds are then sugared, as it is called, by pouring over them a saturated sugar solution, which, by slowly percolating through them, carries with it coloring matter and other impurities without dissolving the sugar crystals. When a saturated aqueous solution of sugar is allowed to cool slowly it forms large, beautiful crystals known as sugar or rock candy. Caramel is burnt sugar; it has a peculiar odor and loses its sweet taste, becoming bitter. It is used largely as a coloring agent for coloring liquids.

Sugar has innumerable uses. As an article of food it is not surpassed, though it cannot support life alone, because it contains no nitrogen. It is the important ingredient in candies, pastries, sweetened drinks, etc. Molasses and treacle are much used and must not be confounded with the sorghum molasses made from the sugarcane of the Central States. Molasses and treacle sometimes have a peculiar and to many a very objectionable flavor, due to impurities present.

Molasses, as well as treacle, when fermented, gives rise to rum. The popular notion that sugar is injurious to teeth is without foundation. It has no action on teeth whatever. If anything it has antiseptic properties and preserves the teeth. It is, however, undoubtedly true that the excessive consumption of sweets, pastries in particular, is bad for the digestion, as externally manifested by a dirty complexion and skin eruptions. As a whole sugar by itself is not injurious; it is an excellent food, a heat producer and easily assimilated. Americans, especially the American youth, are the great sugar consumers of the world.

In medicine sugar is employed to disguise the taste of disagreeable remedies and to coat pills. It has no direct curative properties in disease.

Description of plate: A, plant much reduced; B, stem portion with leaf; C, inflorescence; 1-6, parts of flower.

ALBERT SCHNEIDER.

DEATH OF THE FOREST MONARCH.

Hark! heard you that wailing cry, sad and low?
A nation mourning for their chief?
Stricken and dead he lies, and blow by blow
Is being stripp'd of limb and leaf;
Now from his corse is ta'en the wreath,
His just reward for battling many a year
'Gainst elements; mourn him! your grief,
Ye trees, becomes the time; the world should hear
Your requiem, and for him drop a tear.
Each year the wild bird built its nest
High in his crown, and would its young uprear:
Centuries supreme the Forest
Monarch ruled; but to Earth's broad breast
That nourished him, the ax brought his return.
The Forest Monarch is at rest;
All nature, save the human, seems to mourn.

—George W. H. Phillips, Jr

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. XI. MARCH, 1902. No. 3.

EASTER CAROL.

Hepatica, anemone,
And bloodroot snowy white,
With their pretty wildwood sisters,
Are opening to the light.

Each blossom bears a message
That a little child may read,
Of the wondrous miracle of life
Hid in the buried seed.

In the woods and fields and gardens
We may find the blessed words
Writ in beauty, and may hear them,
Set in music by the birds.

It is Nature's Easter carol,
And we, too, with gladness sing,
For we see the Life immortal
In the promise of the spring.

—ANNA M. PRATT,
From "Among Flowers and Trees with the Poets."

SPRING.

O beautiful world of green!
When bluebirds carol clear,
And rills outleap,
And new buds peep,
And the soft sky seems more near;
With billowy green and leaves,—what then?
How soon we greet the red again!

G. COOPER, "Round the Year."

THE WINTER WREN.

(*Troglodytes hiemalis.*)

How rich the varied choir! The unquiet finch
Calls from the distant hollows, and the wren
Uttereth her sweet and mellow plaint at times.
—Isaac McLellan, "The Notes of the Birds."

The Winter Wren inhabits that part of North America east of the Rocky Mountains, breeding chiefly north of the United States and migrating at the approach of winter nearly or quite to the Gulf of Mexico.

This diminutive form of bird life, which is also called Bunty Wren and Little Log Wren, is a denizen of the forest, and it is more common in those forests found on bottom lands adjacent to rivers. It is a shy bird, and does not seek the intimacy of man as will its cousin, the house wren. It is seldom seen far above the ground. In many places where it does not seem abundant it may be quite common, for it readily eludes observation in the underbrush because of its neutral color. It frequents old logs, where it may be seen "hopping nimbly in and out among the knot-holes and other hollow places, then flitting like a brown butterfly to another place of refuge on the too near approach of an intruder." Some one has said, "Its actions are almost as much like that of a mouse as of a bird, rarely using its wings except for a short flutter from one bush or stone-heap to another; it creeps slyly and rapidly about, appearing for an instant and is then suddenly lost to view."

The Winter Wren builds its nest in the matted roots of an overturned tree, in brush-heaps, in moss-covered stumps, or on the side of a tree trunk. It may be attached to a ledge of rock, and is occasionally found in some unoccupied building, especially if it be a log hut in the woods. The nest is very large and bulky when compared with the size of the bird. Dr. Minot describes a nest that he found in a moss-covered stump in a dark, swampy forest filled with tangled piles of fallen trees and branches. This nest was made of small twigs and moss. It had a very narrow entrance on one side, which was covered by an overhanging bit of moss, which the bird pushed aside on entering. The nests are usually more or less globular and thickly lined with feathers and hair.

This little brown bird, which carries its tail pertly cocked on high, is a notable singer. Many have described this song, or perhaps it is better to say have tried to do so. But words are too inadequate to portray this sweetest of woodland sounds. Reverend Mr. Langille says: "I stand entranced and amazed, my very soul vibrating to this gushing melody, which seems at once expressive of the wildest joy and the tenderest sadness. Is it the voice of some woodland elf, breaking forth into an ecstasy of delight, but ending its lyric in melting notes of sorrow?"

Of this song Florence A. Merriam says: "Full of trills, runs, and grace notes, it was a tinkling, rippling roundelay. It made me think of the song of the ruby-crowned kinglet, the volume and ringing quality of both being startling from birds of their size. But while the kinglet's may be less hampered by considerations of tune, the Wren's song has a more appealing, human character. It is like the bird itself. The dark swamps are made glad by the joyous, wonderful song."

And Audubon beautifully expresses the song as it appealed to him: "The song of the Winter Wren excels that of any other bird of its size with which I am acquainted. It is truly musical, full of cadence, energetic and melodious; its very continuance is surprising, and

FROM COL. CHI. ACAD SCIENCES.

WINTER WREN.
(Troglodytes hiemalis.)
About Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO

dull indeed must be the ear that thrills not on hearing it. When emitted, as it often is, from the dark depths of the unwholesome swamps, it operates so powerfully on the mind that it by contrast inspires a feeling of wonder and delight, and on such occasions has impressed me with a sense of the goodness of the Almighty Creator, who has rendered every spot of earth in some way subservient to the welfare of His creatures."

VOICES IN THE GARDEN.

As the snows were being guarded on the mountain tops by the gentle herder Spring two small seeds, dropped from the same busy hand, fell so near together in a fresh furrow that they could hear each other shiver as they struck the cold, damp earth and were covered over by the same.

"How cold our bed is," said seed number One, as a cold chill ran down her back.

"Yes," replied seed number Two. "But we will soon get used to this cold, and when Father Sun sends the sunbeams to play on our top cover we will get warmth from their little hot feet."

With this thought seed number Two snuggled down in her new bed of earth and pulled the tiny clods around her and shut her eyes to sleep. But seed number One still shivered and complained and wished that she was back in the paper package so loudly that all her companions in the furrow were disturbed, especially number Two, who was lying so near.

"Aren't you feeling more comfortable?" asked seed number Two.

"No, I am not. I am freezing, and these cold clods are mashing me. I wish I was back in the paper though we were crowded on top of each other."

"But you could not grow there."

"No, but I could be more comfortable. If it takes these old black clods to make me grow I don't know that I want to grow," and she gave a sniff to show her contempt.

"Stop! You don't realize what you are saying! You are near committing the unpardonable sin. Do you remember your promise to Mother Nature as she placed within your bosom the sacred germ of life? That promise which you gave to grow, at the first opportunity, and to do all within your power to become strong and vigorous, producing seeds in which she could place like germs. Then have you forgotten your dying mother's request that you live up to this solemn promise?"

Seed number One did not reply, but gave a little rebellious grunt to show her state of feelings and remained silent.

This was a great relief to the other seeds, who were enduring the discomforts of their new and chilly environments with as much fortitude as possible, hoping and believing that their new home would yet become more comfortable. Finally all became quiet and they shut their eyes and waited and dreamed.

The cold, dark night was at last over. The seeds in their little dark chambers could not see this, but they knew it was so when they felt the warm influence of the sunbeams as it crept stealthily down through the damp soil and warmed their cold, wet wrappings. Oh, how it did revive them! They grew larger as they tried to express their thankfulness. The quickening power within pictured to them bright sunshine, refreshing showers and warm, balmy nights. But there they lay helpless in the dark, waiting and dreaming and dimly feeling that—

> Instinct within that reaches and towers
> And, groping blindly above for light,
> Climbs to a soul in grass and flowers.

But the greatest change of all was in seed number One. She had spent the dark, cold night in thinking of the promise she had given and about which she had been reminded by seed number Two. Gradually the angry, rebellious feelings passed away and she began to realize how sinful her spirit had been. And now that the warm sunshine had turned the cold, wet clods into a blessing she most heart-

ily felt ashamed of herself and could get no rest until she gave some expression to this feeling. She began by snuggling closer down among the clods and trying to make them feel that she was glad to be among them.

Then she whispered to them softly: "I am so sorry for the rude, impatient, angry words I spoke yesterday when I first came among you. Can you forgive me?"

"Certainly we will," said the big clod that the seed had accused of mashing her. "I know we are rough looking companions for a tiny seed and oftimes we are forced, by influences from without, to act rudely. But Mother Nature knows our needs and will send water to soften our natures and men will lift and stir us about so that we can do our very best work in helping you and other seeds to perform life's obligations."

"Yes," replied the seed, "I now remember how my mother used to praise you and tell us children that the nice juicy food she brought for us to eat came from the soil surrounding her roots."

"I am glad you can remember us so kindly," responded the clod. "Though we are the lowest of God's creation, we are also the oldest, and He has most graciously used us as an instrument in performing His higher works. We hold a very humble place, and are trodden upon by all of His creatures, yet we are happy in realizing that we, too, have a direct commission from him and a part to perform in the creation of the great living world above us. Our most extensive and immediate work is helping Mother Nature to produce the vegetable kingdom, to which you belong, and we want you to feel," continued the clod, that you are among friends who are waiting and anxious to serve you."

"Thank you," replied the seed; "you are very, very kind, and I am sure I shall learn to love you dearly." Saying this she crept down closer into the warm little crevice and the clod, absorbing the water that had been turned into the furrow, melted around her and gave her protection, moisture and food.

The next night did not seem so cold to the seeds. They had become better acquainted with the soil and through the influence of the sun and water were clasped more warmly and tenderly in his arms. There they lay and waited until the little germ within them began to stir and knock for egress. The kind soil had by his own virtues softened their walls so that it was not difficult for the swelling germs to make an opening through which they stretched tiny white hands and laid them lovingly into the strong ones of their benefactor. In these handclasps were pledged mutual co-operation, sympathy and love throughout life. "Useless each without the other."

No sooner had these little hands made sure of their hold upon the soil than there came an irrepressible longing in the heart bud to reach up and to know another world. In obedience to this call the little bud peeped out of its own hull and crept softly through the soil, up to the sunshine and air. There it unfolded two tiny leaves in thankfulness and praise to One who had made possible this new life. As the fullness of the higher world was comprehended, other leaves were thrown out until the little plant became a whorl of praise and gladness.

At this juncture new difficulties arose. These little leaves forgot their higher mission of love and praise and began to crowd and push each other, each striving to grow tallest and command the greatest space. As seeds number One and Two lay very near each other it was not long before their leaves came together in the air world. They had been so busy growing that they had talked but little to each other since the first night. Seed number One had grown so happy, gentle and meek that she was fast gaining friends on all sides. Every one regretted that they had so harshly condemned her. But now this new trial was a severe test to her genuine heart goodness. At first she made some show of patience, for seed number Two, her closest neighbor, was so unselfish and gentle in all that she did that there was little excuse to be otherwise. But no sooner did other leaves come into the space she considered her own than her leaves began to rustle and complain and to say: "It is no use for me to try to grow, crowded up like this. I wish I had been planted somewhere all by myself."

Then seed number Two gently whispered: "He who took you from your

mother's dead arms, kept you from freezing during the cold winter months and prepared for you this nice loose furrow in which to grow had a right to plant you where He wished and to do with you what He thinks best. As for 'growing room,' there is likely to be plenty of it within a few days for all those who have the good fortune to be here." At this there was a rustle of surprise among the bystanders and they asked what she meant.

"I remember mother telling about her early life," continued seed number Two, "how at first she and her companions were so crowded together that some lost all their beautiful green color and became white and sickly. But one day a girl, with a bucket on her arm and a knife in her hand, came and sat down near them. They all held their breath, not knowing what she intended to do. Then the girl took the knife and, catching a number of mother's companions by the leaves, cut them off just below their bud. This she continued to do until her bucket was full. When she left there was plenty of room for those remaining to grow, but their hearts were sad and anxious.

"Each day the girl came back to some portion of the bed and acted in the same manner until the bunches were so scattering that the leaves did not touch each other. Each time mother expected that she would be one of the number and be cut off from the life she loved and in which she was hoping to redeem her promise to bear seeds for Mother Nature. Finally she and her companions began to notice that the girl always chose the largest and freshest looking bunches. Then some of them began to say: 'What is the use of us trying our best to grow strong and vigorous? That very state endangers our lives. Mother Nature surely did not understand these surroundings when she exacted this promise from us!' One bold, rebellious spirit said: 'I am going to have my roots stop their work that my leaves may turn yellow and brown; and then I will get the wind to split and break them.' 'But,' said mother, 'that will be death.'

" 'Well, what does it matter? I would as lief die one way as another,' gruffly responded the bold speaker.

"Most of mother's companions nodded their assent, so she said nothing more until she had time to quietly think over the matter. That night mother stood, awake, looking up at the stars and trying to know what was best to do. Finally, when the first whispers of morning could be heard, they brought her this message: 'Always and under all circumstances do your best. Live up to the highest and noblest within you and leave the result to Him who knows the heart.'

"Then there came peace and courage, and mother rose above the fear of death and resolved that she would not relax one effort to grow and carry out in detail the promise she had given. She was convinced that Mother Nature wanted her best each day rather than a mere existence in order that she might bear some puny seeds.

"Several days went by and the girl did not appear. The contrast became greater and greater between mother and her companions. She stood erect, holding her broad green leaves up to the sun, while in the midst of them could be seen a young, vigorous seed stalk crowned with the precious promises of the future. The leaves of her companions were fast turning yellow and brown and their whole attitude was dejected and forlorn.

"One day they heard voices in the garden. They thought this must be the girl coming to fill her bucket. All eyes were turned toward mother. They felt sure she would be the first chosen. But mother was calm and possessed, rejoicing in the knowledge that she had lived up to her higher duties and therefore was better prepared to either be cut down or left standing as fate would decide.

"As the voices came nearer they recognized the owner of the garden and with her John, who had always been their good friend, pulling up the weeds and loosening the soil around their roots. The owner and John were soon standing beside the bed where mother and her companions grew, and then the voice of the woman could be heard saying: 'John, this bed is doing no good. The season is about over, anyway, so you can spade it up and sow it to early turnips. But look!' and the woman stooped and touched mother's crisp leaves. 'Isn't this a beautiful specimen of fine letuce? John, you

may leave this bunch for seed.'

"So it came about that mother only, of all her companions, was allowed to complete a natural life and to realize the hope that we all have in common."

As seed number Two finished this narrative they were all very thoughtful and felt more considerate for each other in their crowded condition.

Sure enough, within the next day or two a woman with a pan and knife came down the row and began to thin out their number. Seed numbers One and Two trembled as she passed them, but she did not stop to take either.

That evening seed number One whispered to her companion: "You are very fortunate to have had such a noble mother. I know now why it is so easy for you to be patient and good."

"Ah! you do not know nor understand, or you would not call me good nor think that it is easy for me to be always patient. I love and honor the memory of my mother, but she does not possess the power to make me good. Mother Nature holds each of us responsible for our own acts and judges us accordingly."

After a thoughtful silence seed number One said: "I am growing to try to be good and to grow strong and upright," and she stretched herself a little bit higher in her own effort to appear so.

A few days after this a small, tiny worm came creeping and shivering along the ground and stopped first under the leaves of seed number One and asked for a nibble.

"No," replied the seed, "my leaves must be kept whole and beautiful, for it is only in this way that I can be my best self and thereby win Mother Nature's approval."

"But I am starving," replied the worm. "I cannot find a morsel to eat anywhere. Please give me one of your under leaves that I may gain strength to crawl on and hunt other food. I do not ask your life, but only a bit of your under leaves, which you can well spare."

"But it will spoil my appearance," said the seed, "and Mother Nature wants me to be beautiful. And then I can't bear to have a nasty worm touch me," and she rustled and drew up her beautiful green leaves to show her disgust.

"Very well," said the worm, "I will not take by force what you are not willing to give through mercy. Some day you will know me better," and the worm crawled away.

He stopped at seed number Two and made the same request. At first she hesitated, but seeing how near starved the poor worm was and how humbly and meekly he asked for the food, she relented.

"I know," said the seed, "you will spoil the appearance of my leaves and I shall look shabby among my companions, but knowing that you, too, are one of Mother Nature's children, I cannot believe that she would have me withhold life from you. Therefore, I give you of my leaves as giving unto her, leaving the result with her."

The worm most heartily thanked the seed and began eating. He stayed a day or two, making several large holes through the under leaves, but at the end of that time he had become strong and vigorous, and again thanking her, he crawled away.

Several days after the worm had departed and seeds numbers One and Two had grown to be quite large bunches, the woman with her knife came down the row. She seemed to be in a great hurry and was gathering the largest bunches as she came along. When she reached the two companions she stooped and laid her knife at the root of number Two, but noticing the holes in her leaves she quickly changed to seed number One and the knife went home. Poor seed number One fell over on her side and was gathered up and placed in the pan. The woman passed on and seed number Two was left standing, but shaking with the emotions of fear, thankfulness and regret. For after all, she loved seed number One and was truly sorry that she had been taken.

All that afternoon seed number Two remained very quiet and her companions knew why.

"How strange!" they murmured. "What we thought was her degradation and destruction has really been her salvation."

And they looked upon her with awe and whispered:

"How strange! How strange!"

M. Alice Spradlin.

FROM COL. CHI. ACAD. SCIENCES.

474

LECONTE'S SPARROW.
(Ammodramus leconteii.)
About Life-size.

COPYRIGHT 1903, BY A. W. MUMFORD, CHICA

THE LECONTE'S SPARROW.

(*Ammodramus leconteii.*)

The Leconte's Sparrow has an interesting history. It was first discovered and named by Audubon in 1843. Later, his account seemed almost a myth, for no more individuals were taken, and even the specimen on which he based his published report of the new species was lost. It was not seen again until Dr. Coues rediscovered it in 1873, obtaining his specimens on the Turtle Mountain, near the border of Dakota.

Of their habits, Dr. Coues says: "In their mode of flight the birds resemble wrens; a simile which suggested itself to me at the time was that of a bee returning home laden with pollen; they flew straight and steady enough, but rather feebly, as if heavily freighted for their very short wings."

Its range is quite extensive, for it is found from the Great Plains eastward through Illinois and Indiana and from Manitoba southward. During the winter months it frequents the States bordering the Gulf of Mexico. This Sparrow is often seen in the stubble of grain fields which have become covered with grass and low weeds, to the cover of which it will retreat when frightened. In this respect it resembles the grasshopper sparrow, and like it is easily overlooked. Mr. Nelson found it on moist prairies that were covered with a growth of coarse grass. It is also frequently seen in the swampy prairies of the Mississippi bottom lands.

Mr. Oliver Davie quotes the following description of the bird's habits from an observer who studied their habits in Manitoba, where they nest extensively: "Leconte's Sparrows are fairly numerous in Manitoba. Their peculiar note can be heard both day and night in fine weather; the only sound I can compare it to is the note of the grasshopper. It is one of the most difficult of all the small birds to collect that I know of. They are great skulkers. I have often followed them, guided by their chirping, in the grass until I was sure the bird was not more than a few yards away; then he would suddenly 'crowd on all sail' and dart away at a high rate of speed, gyrating from side to side in a manner that would test the skill of any collector."

The nests are described as concealed in a thick tuft of grass and are rather deep and cup shaped. They are constructed of fine grass and fibers.

Though this elegant little Sparrow baffled bird lovers for so many years, it is now known to be abundant in many localities, and it is only because of its peculiar and retiring habits, living as it does in grassy places not easily accessible, that it is not more often observed.

EASTER LILIES.

The one delight of Grace Newton's life was to visit Aunt Chatty White. Winter or summer, autumn or spring—no matter what the season nor how bright or how gloomy the weather—there was sure to be found some unusually fascinating pleasure or employment. There were books of every description with which to while away the winter days. And in summer the trees were full of fruit, the yard with flowers, the fields and garden with good things, while the birds saucily claimed possession of all.

But when she was told by Mamma that she should open Easter with Aunt Chatty her heart was a-flutter with a joy not known before. Easter—her first away from home! And she was sure that there would be presents, and new books to read, and new stories to hear, and rabbits' nests to visit, and—well, it would be the gladdest Easter of her life, she was certain.

It was Good Friday when she arrived at her aunt's quiet country home. The winter was dying away and spring was making itself known and felt, while a few birds were venturing to sing of summer's return. The buds were swelling, the lawns and meadows were becoming green, and in the woods Grace was sure she could find, should she try, a violet, a bloodroot bloom, or a dainty snowdrop. For these were the first flowers, and sometimes appeared, her mother told her, before the snow was fairly gone.

A surprise awaited her, however; for, as she was wandering aimlessly about the garden borders that afternoon, she suddenly came upon a bed of golden buds and blossoms. After gazing at them a few moments to make sure she was not dreaming, she hastened away to Aunt Chatty for an explanation.

"Why, dearie, those are Easter flowers," laughed her aunt.

"But I thought Easter lilies were white."

"Not all of them. I have some white ones—in another part of the garden. Those you saw are daffodils and jonquils."

"John—who?" queried Grace, in astonishment.

"Jonquils," repeated Mrs. White, amused not a little at Grace's ignorance and wonder. "Come! I'll show you which is which."

Grace ran on ahead, and was minutely inspecting the tender young blossoms when her aunt arrived.

"The large double yellow ones are daffodils. Those across yonder are the white ones. Wait!" she called, for the impatient child had already started toward the bed of more familiar lilies. "Here are the jonquils—these with cups. Really the name for these, both the yellow and the white, is Narcissus. Presently I'll tell you how they came to have that name. There are twenty or thirty kinds, but the most perfect forms grow in Europe and Japan. Cultivation has done a great deal for the Narcissus, both in this and other countries, but these of mine are but the old-fashioned sort that grandmother planted here. Now let's go see the white ones. Will they be in full bloom for Easter?"

"Yes," replied Grace. "See, here are two now. Mamma has this kind," and she fondled the snowy blossoms as though they were friends of long standing.

"These are, without doubt, the 'lilies of the field' that Christ spoke of," said Aunt Chatty. "Isn't it nice of them to hurry from the ground in the spring in time to remind us of the resurrection of Him who commended them so highly? And their whiteness tells us of His purity, as though they wish to honor Him as long as they live."

"But tell me, aunty, how they came to have that other name," urged Grace presently.

"Oh, yes. That story was told by the ancients to frighten boys and girls who were selfish and unkind."

To the cosy sitting room they repaired, for the air had not yet become warm enough for so lengthy a stay out of doors. When both were comfortably settled Aunt Chatty began:

"There was a very beautiful youth, mythology tells us, who was devotedly loved by a wood nymph, Echo. But she had incurred the displeasure of Juno, their goddess of the heavens, and by her had been condemned to have the power to speak only the last word and was forbidden any other. For this reason she could not address Narcissus, much as she desired to do so. When he did speak, finally, Echo answered by repeating his last word. Her heart was full of joy, for she was sure that at last her opportunity had come. But in spite of her beauty and purity the youth repelled her, and left her to haunt the recesses of the woods. In her disappointment she pined for him until her form faded because of grief. Her bones were changed to rocks and there was nothing left but her voice. With that she is still ready to reply to anyone who calls to her and keeps up her old habit of having the last word.

"Narcissus was cruel not in this case alone. He shunned every one else as he had done poor Echo. One day one of those whom he repelled so heartlessly breathed a prayer that he should some day feel what it was to receive no return of affection. The wish was granted.

"There was a fountain, with water like silver, to which the shepherds never drove their flocks. In fact, nothing ever disturbed its water, and here one day Narcissus chanced to stop to drink. He saw his own likeness in the water and, thinking it a beautiful water spirit living in the fountain, admired and loved it. He talked to it, but it would not answer; he tried to catch it, but it fled whenever he touched the water. He could not tear himself away from the spot, for he was so captivated by the lovely face in the fountain that he ignored all else. So there he stayed until he lost his color, his vigor, and the beauty which had so charmed Echo. She kept near him, however, and when, in his grief, he exclaimed, 'Alas! alas!' she answered with the same words. He pined away and died. The nymphs prepared a funeral pile and would have burned the body, but it was nowhere to be found; in its place was a flower, purple within and surrounded with white leaves, which bears the name and preserves the memory of Narcissus."

When Aunt Chatty had finished, Grace, after gazing out at the white Easter lilies a few moments, said:

"I like the story, but I don't like Narcissus. He was too selfish and ungrateful. I like the story best that you told me in the garden, the one about the 'lilies of the field.'" CLAUDIA MAY FERRIN.

THE CALL OF THE KILLDEE.

"Killdee, killdee."
The pleasantest sight to me
Is a little brown bird with a curious word;
A queer little word that to-day I have heard
For the very first time this spring, you see,
And that queer little word is "Killdee, killdee."
That curious word is "Killdee."

"Killdee, killdee."
It is cheery and clear as can be.
And there's snow in the gully not melted away,
And ice in the river; I saw it to-day.
Yet there he goes dipping and skimming along
And singing so blithely his queer little song:
"'Tis spring. Killdee, Killdee."

—MARY MORRISON.

THE NORTHERN PHALAROPE.

(*Phalaropus lobatus.*)

The Northern Phalarope has a wide range, extending throughout the northern portion of the Northern Hemisphere and in winter reaching the tropics. It breeds only in Arctic latitudes. It is a bird of the ocean, and seldom is observed inland except as a rare migrant early in May or in October. Then it "frequents slow streams or marshy pools."

This Phalarope belongs to the shore birds and to a family that contains but three known species. Two of these are sea birds. The other, Wilson's phalarope, is an inhabitant of the interior of North America. Their feet are webbed, and usually the two marine forms, or sea snipe, as they are sometimes called, migrate in flocks far from land. Mr. Chapman says: "I have seen it in great numbers about one hundred miles off Barnegat, New Jersey, in May. For several hours the steamer passed through flocks, which were swimming on the ocean. They arose in a body at our approach, and in close rank whirled away to the right or left in search of new feeding grounds."

It is not an exaggeration to say that it is one of the most beautiful of our aquatic birds. All its motions are graceful. It possesses a quiet dignity and elegance while swimming in search of food, which it frequently obtains by thrusting its bill into the water. In this manner it obtains a large number of marine animals and flies that may be on the surface of the water. When on the shore it may be seen wading and swimming in ponds near the coast.

Dr. Coues wrote in an interesting manner of this bird. He said that the Northern Phalarope is "a curious compound of a wader and swimmer. Take one of our common little sandpipers, fit it for sea by making oars of its feet, and launch it upon the great deep, you have a Northern Phalarope. You may see a flotilla of these little animated cockle-boats riding lightly on the waves anywhere off the coast of New England.'

Its habits at the mating season are most interesting, and no words can better describe them than those of Mr. E. W. Nelson: "As the season comes on when the flames of love mount high, the dull-colored male moves about the pool, apparently heedless of the surrounding fair ones. Such stoical indifference usually appears too much for the feelings of some of the fair ones to bear. A female coyly glides close to him and bows her head in pretty submissiveness, but he turns away, pecks at a bit of food and moves off; she follows and he quickens his speed, but in vain; he is her choice, and she proudly arches her neck and in mazy circles passes and repasses close before the harassed bachelor. He turns his breast first to one side, then to the other, as though to escape, but there is his gentle wooer ever pressing her suit before him. Frequently he takes flight to another part of the pool, all to no purpose. If with affected indifference he tries to feed she swims along side by side, almost touching him, and at intervals rises on wing above him and, poised a foot or two over his back, makes a half dozen quick, sharp wing-strokes, producing a series of sharp, whistling noises in rapid succession. In the course of time it is said that water will wear the hardest rock, and it is certain that time and importunity have their full effect upon the male of this Phalarope, and soon all are comfortably married, while mater familias no longer needs to use her seductive ways and charming blandishments to draw his notice."

Then after the four dark and heavily marked eggs are laid the "captive male is introduced to new duties, and spends half his time on the eggs, while the female keeps about the pool close by."

FROM COL. CHI. ACAD. SCIENCES.

475

NORTHERN PHALAROPE.
(Phalaropus lobatus.)
3/4 Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

These birds, which possess such dainty elegance in all their motions, do not exhibit a corresponding degree of taste in home building. Their nests, at best, consist of only a few blades of grass and fragments of moss laid loosely together. Often the eggs are laid in some convenient hollow, with no bedding whatever except that which happened to lodge there.

These are a few of the facts in the life history of this bird, which starts in its career as a little ball of buff and brown and later in life "glides hither and thither on the water, apparently drifted by its fancy, and skims about the pool like an autumn leaf wafted before the playful zephyrs on some embosomed lakelet in the forest."

OUR LITTLE MARTYRS.

Do we care, you and I,
For the songbirds winging by?
Ruffled throat and bosom's sheen,
Thrill of wing, of gold or green,
Sapphire, crimson—gorgeous dye
Lost or found across the sky,
'Midst the glory of the air,
Birds who tenderer colors wear?
What to us the free bird's song,
Breath of passion, breath of wrong,
Wood-heart's orchestra, her life,
Breath of love and breath of strife,
Joy's fantasias, anguish breath,
Cries of doubt and cries of death?
Shall we care when nesting-time
Brings no birds from any clime,
Not a voice or ruby wing,
Not a single nest to swing
'Midst the reeds or higher up,
Like a dainty fairy-cup;
Not a single little friend,
All the way as footsteps wend
Here and there through every clime,
Not a bird at any time?
Does it matter, do we care
What the feathers women wear
Cost the world? For birds must die;
Not a clime where they may fly
Safely through their native air;
Slaughter meets them everywhere.
Scorned be hands that touch such spoil!
Let women pity, and recoil
From traffic, barbarous and grave,
And quickly strive the birds to save.

—GEORGE KLINGLE.

A CARGO OF STOWAWAYS.

"Birds of ocean and of air
Hither in a troop repair."
—Aristophanes' "The Birds."

Passing out of the golden sunrise into a world of blue sky and the blue waters of Lake Huron, we regretfully assured ourselves that save for the shadowy gray and white gulls that followed in the wake of our steamer in search of a breakfast, there would be for us no bird reviews so dear to the heart of the ornithologist in a strange country, or not at least until we should have reached the far distant islands in the picturesque River Sault Ste. Mary, so with the inertia of the blank waters about us we prepared to be content, but in this instance, as in many others, we were to learn that conclusions are by no means conclusive, and it was with joy that we could exclaim with Aristophanes:

"But hark! the rushing sound of rushing wings
Approaches us,"

when before our delighted and surprised eyes alighted a bronze grackle, most majestic of blackbirds, who stepped off across the deck with all of the pride of a lately promoted major, doubtless glad enough to find himself on solid footing after the heavy gale of the past night, which has blown him into unknown seas. His rich metallic plumage gleamed in the sunlight as he eyed us inquisitively, the while walking calmly about us picking up the insects of which we seemed to have an abundant supply aboard. But where is the little wife to whom he was so devoted, and whose labors of incubation he so materially assisted, taking his "turn" on the nest with clock-like regularity? But also he shared with her their rich song notes which so delight us during the courting season. But our grackle is by no means the only stowaway we were to carry north with us, for all at once the air was resonant with excited "chips" and "zeeps" as the different winged passengers arrived. At least half a dozen pine warblers contentedly flitted onto the deck, filling the air with their sweet calls, and dancing about like little balls of yellow feathers. And to delight beyond anything the heart of a bird enthusiast, far more indeed than can any result of gun, camera or opera glass, was the fact that exhaustion and hunger had entirely obliterated from these birds every trace of their dread of the human kind, and they associated with us as fearlessly as tho' to the manor born. Particularly was this true of the pine warblers who hopped about us on the hatchways like chickens, one venturesome little fellow even becoming so familiar as to alight on the toe of my slipper, and quietly inspect its steel embroidery with silent curiosity, occasionally glancing up at me out of his round, bright eyes as confidentially as though he was a connoisseur in footwear. Another warbler lit on the corner of a book that one of the passengers was holding in her hand. This rare friendliness made us feel that we had not only the bird in the hand, but also the two in the bush, with still a balance in our favor, for we could study their movements as intimately as we desired, but I could hardly keep from rubbing my eyes in amazement, fearing "'twas but a dream," or that my brain has been turned as topsy turvy this morning as was my stomach the night before. But the experience was certainly uniquely delightful to say the least. After all of these years of careful peeking and prying to secure a moment's observation of some of these birds, to have them now flitting about me, at my very feet as it were, in this familiar and friendly fash-

ion was indeed a rare treat. It is Darwin who has said that he had come to the conclusion that the wildness of of birds with regard to man is a particular instinct directed against him, and not dependent on any general degree of caution arising from other sources of danger. Birds in general, however, have had reason to become timid from their experience of the human biped, and hold with Eben Holden that "Men are the most terrible of all critters, an' the meanest. They're the only critters that kill fer fun," and it has become instinctive for them to act accordingly.

However, we had not yet arrived at the end of our experience with the sociable bird world, for it seemed that we were to carry a full cargo of stowaways, for the next arrivals were six or seven juncos savoring of frost and wintry weather, notwithstanding the heat of the autumnal sun. Miss Merriam has quaintly styled these busy little birds: "Gray robed monks and nuns," though their character does not cleverly carry out that conception, for they are a pugnacious lot of feathers and blood, and there were pitch battles going on at every hatch corner, the juncos playing the part of the aggressor every time, turning and conspicuously flaunting their stylish white tail markings in the face of their opponents. The next advent was that of a tiny house wren, who seemed to have had a good deal of his natural belligerency blown out of him, and was content to make a peaceful breakfast on the Canada soldiers that were swarming about. Wrens are noticeable for the interest that they take in human belongings, and love to make their home among them. At Marquette I was shown a nest built in an overshoe inadvertently left in the crotch of an apple tree, and which, I am glad to report, the owner left undisturbed when she learned by whom it was preempted. I thought of our little stowaway when I saw the nest and wondered how much he could have told me of its construction. Some one has mentioned a nest built in an old coat sleeve, and Audubon tells us of a pair that nested in his parlor, paying him rent in song music. The wren has also received much "honorable mention" in history, Aristotle being the first, I believe, to call him the King of Birds, possibly because of the legend that tells us that to gain his sovereignty in a trial of flight he concealed himself on the back of an eagle who was one of the contestants, and after that bird of mighty wing power had reached his limit the wren, arising from his seat among the eagle's feathers, easily flew much higher, thus gaining the race and title. Perhaps not the first time that high places have been arrived at through duplicity. But, in justice to his species, mention should be made of the myth that asserts that in ye golden time the wren was the only bird brave enough to enter heaven and bring down fire to earth for the benefit of the mortals. In this philanthropical work he scorched off his feathers, so the other birds made a donation party and each contributed some spare feathers to the singed benefactor (but we notice that their generosity, like that of some others, was confined to donating their plainest apparel), all but the owl, who refused to part with a single quill, but who for his stinginess was at once ostracised from good society, and forced to make his appearance only after nightfall, when the "best people" were not in evidence.

Of the two other members of the warbler family, who traveled north with us singly and alone, one was a Blackburnian warbler, silent and dull of plumage as befitted the season, and the other a dainty black-throated blue warbler, one of the most dressy and gentlemanly appearing birds of the warbler species. In his steely blue coat, black stock and evening vest and wide expanse of white shirt front, he looks as though fully attired for a swell reception. His two white wing patches closely resemble handkerchiefs peeping from side pockets, completing the illusion. He was rather more reserved in his movements than the gang of noisy associates, and picked daintily at the flies as befits well-bred superiority. But he, like the rest, showed no apparent distrust of us, neither did some newly arrived white-throated sparrows, who joined in the general scramble for insects. But not now do we hear their cheerful "I-have-got-plenty-to-eat-but-no-che-eze," as Dr. Brewer interprets their song. I am sure that they could have had cheese or anything else they

desired on board the Castalia, for on hospitable thoughts intent I secured some crumbs from the table, but my feathered fellow travelers would have none of me, passing my humble offerings by in disdain. There was but one death on the passage, and that was a white-eyed vireo, who either succumbed to exhaustion or struck the rigging too violently in boarding the steamer.

But birds were not the only winged creatures who took passage with us. For several hours a continuous stream of honey bees and yellow-jackets flew exhausted upon the deck, only to become food for the bee-eating passengers. The few who escaped and revived sufficiently to crawl up onto the cabin were so fatigued that one could stroke them gently without provoking any antagonism. Wafted across the blue waters by adverse winds came also myriads of common yellow butterflies, tossing in the gentle breeze like handfuls of shining buttercups, and great troops of beautiful milkweed butterflies (Anosia plexippus), their brilliant colors gleaming in the sunlight in all the richness of ebony and crimson. They hovered about the steamer like gorgeous blossoms cut from the parent stalk and left poised in mid air at the mercy of treacherous gales. Funny little atoms of vanity and brightness, whose homes are among the gardens of peace and sunshine, what business had they here in this region of seething waters and tempestuous winds?

We looked to have our feathered friends leave us upon the first appearance of land, but, on the contrary, they remained with us all of the afternoon, as we sailed in and out among the picturesque islands of the "Soo" river, and it was not until toward their bed-time and the setting of the sun that they gradually began to disappear; the last to leave, and that was at dusk, was the black-throated blue warbler. Just before reaching the lock a couple of juncos perched on the rail and engaged in what seemed to us a very heated discussion, until finally one of them, with a chip of command, flew to the shore, the other following in a moment with a note of protest. The latter's idea doubtless was to remain with a good thing in hand rather than venture into pastures new of unknown possibilities.

On our return trip, the weather being calm, no birds were:

"Buffeted and baffled, with the gusty gale,"

hence our only stowaways were a couple of yellow warblers, who spent most of their time in one of the offices catching flies on the wall, and we were obliged to resort to other resources for our entertainment, and found at least artistic as well as botanical enjoyment in looking at the great bunches of golden rod, yellow cone flowers and pale primroses, a combination of yellows that formed an exquisite blend, and which covered the embankment of the great willow dike on St. Clair Flats, that seems fast running into a state of dilapidation and decay. But it is a delightful sail down the willow-bordered lane of blue water, a stray bit of Venice with Venice left out, as it were, and where no angry waters toss the brave mariner and consequently seasick traveler across mighty billows, a performance which is a by no means charming accessory to one's erstwhile home on the bounding deep.

ALBERTA A. FIELD.

FROM COL. CHI. ACAD. SCIENCES.

476

HAIRY WOODPECKER.
(Dryobates villosus.)
Life-size.

COPYRIGHT 1900, BY A. W. MUMFORD, CHICAGO.

THE HAIRY WOODPECKER.

(*Dryobates villosus.*)

The woodpeckers on trunk of gnarled trees
Tap their quick drum-beats with their horny beaks.
—Isaac McLellan, "Nature's Invitation."

The geographical and the breeding ranges of the Hairy Woodpecker are practically the same. These include eastern North America from the southern provinces of Canada southward to the States bordering the Gulf of Mexico and those of the southeastern United States bordering the Atlantic Ocean. In these States it is occasionally found during the winter season. Westward its range extends to the Rocky Mountains. It is, however, most abundant in the forest areas of the Northern and Middle States, where, as it is a hardy bird and not greatly affected by extreme cold, it is generally a constant resident. Though occasionally found in old orchards, its choice feeding grounds are the timbered regions of river banks and other bodies of water. Here and in the trees at the outer borders of forests it seeks its food by itself, for it has an unsocial disposition, and it is seldom that more than a pair are seen together. "It does not live in harmony with smaller species of its own kind, and drives them away when they encroach on its feeding grounds, being exceedingly greedy in disposition and always hungry." It also is not adverse to a home in the deeper forests and may even frequent clumps of trees in the open.

The Hairy Woodpecker is one of the most useful and valuable friends of human interests. Not only does it feed upon the larvæ that burrow in the wood and bark of our forest and orchard trees, but also upon beetles and other insects. It is only in the winter season, when its natural food is not readily obtained, that it gathers seeds and fruits. It never attacks a sound tree for any purpose, and the loss caused by the amount of useful grain destroyed is greatly overbalanced by the good that it does in the destruction of noxious insects.

The value of this shy and retiring bird is well illustrated by Mr. V. A. Alderson, who says in the "Oologist" (July, 1890): "Last summer potato bugs covered every patch of potatoes in Marathon County, Wisconsin. One of my friends here found his patch an exception, and, therefore, took pains to find out the reason, and observed a Hairy Woodpecker making frequent visits to the potato field and going from there to a large pine stub a little distance away. After observing this for about six weeks, he made a visit to the pine stub, and found, on inspection, a large hole in its side, almost fifteen feet up. He took his ax and cut down the stub, split it open, and found inside over two bushels of bugs. All had their heads off and bodies intact. Now, why did the Woodpecker carry the bugs whole to the tree and only bite off and eat the heads, which could have been done in the open field?"

The Hairy Woodpecker has no leisure moments. He is always active and

The little tap of busy bill
The signal of his work and skill.

is ever present

To rid the soil of every foe,
To guard the leafy trees.

The movements of this Woodpecker are interesting, for, like its sister species, it moves with equal facility either upwards or downwards, sidewise or backwards upon a tree trunk. From time to time it will stop and seem to listen, and, finally bracing itself with the stiff feathers of its spiney tail, it will deliver powerful blows with its chisel-like bill at some point that will be likely to furnish a dainty morsel of food. There is little doubt that its sense of hearing is very acute and that it can detect the slightest movement of an insect in the bark

or wood of a tree that to other animals would be imperceptible.

The flight of the Hairy Woodpecker is like that of the other species of its group. It is wavering and undulating, seldom protracted and usually consisting of a number of short vibrations of the wings. When alighting, they grasp the object with both feet simultaneously. This Woodpecker is the earliest of all the family to build its nest. Mating begins in the latter part of March, and at this time the birds are exceedingly noisy. The male when not feeding will resort to some dead limb and vigorously drum and "the louder the noise produced, the more satisfactory it appears to be to the performer."

Regarding the building of the nest, Major Bendire says: "Both sexes take part in the labor, and it is really wonderful how neat and smooth an excavation these birds can make with their chisel-shaped bills in a comparatively short time. The entrance hole is round, as if made with an auger, about two inches in diameter, and just large enough to admit the body of the bird; the edges are nicely beveled, the inside is equally smooth, and the cavity is gradually enlarged toward the bottom. The entrance hole, which is not unfrequently placed under a limb for protection from the weather, generally runs in straight through the solid wood for about three inches, and then downward from ten to eighteen inches, and some of the finer chips are allowed to remain on the bottom of the cavity, in which the eggs are deposited. Both dead and living trees are selected for nesting sites, generally the former. When living trees are chosen, the inner core, or heart of the tree, is usually more or less decayed. These nesting sites are nearly always selected with such good judgment that such obstacles as hard knots are rarely encountered; should this occur, the site is abandoned and a fresh one selected." The male, after the work is completed, will often excavate one or more holes in the same tree in order that he may have a resting place at night near to his mate.

A VARICOLORED FROG.

An amateur naturalist, amid the ordinary organic forms that he may encounter in his own country, is often grievously puzzled at curious specimens of animal life that may be brought under his attention. But amid the illimitable animal life of the wild region of the upper Orinoco even the most expert and learned naturalist will often find himself "stumped" by the many unusual and hitherto undiscovered things that occasionally beset his pathway.

Among the many curious and quaint animal specimens encountered by the writer in this region was an arboreal frog of startlingly beautiful colorings. This little creature rested upon a stomach of orange flame hue, while the head and back were marked with velvet purple tints, and a narrow snow-white stripe extended from the point of his nose to the tip of a tiny tail. With such brilliant colorings it is easily and distinctly observed, but the snakes, weasels and other arch enemies of the amphibians have no relish for this handsome specimen. Its weapon of defense against its would-be enemies is a sweat venom of a most nauseous odor, which it emits when any one approaches it. This venom is common among the toads, and the fact is referred to by Juvenal (Dryden's translation) of the lady "who squeezed a toad into her husband's wine." It is probable that the beautiful frog of so many glaring colors would have long since been exterminated by its many enemies and persecutors but for the poisonous and nauseous fluid ejected from its glands.

ANDREW JAMES MILLER.

WAS IT REASON OR INSTINCT?

Old Boney is a large shaggy dog of a deep tan color, and a general favorite among the people in the quarter of the city in which he lives, while he is honored and respected by every member of the canine race for miles around. Especially are the little children fond of him; and it seems to be as much a pastime for him as for his young playmates to carry the boys and girls on his broad back, their little, chubby hands buried in his long, matted hair in their half-frightened efforts to keep from slipping off and tumbling upon the ground.

His owner's daughter, a young girl just entering her teens, attends the high school, about three blocks from her home, which is reached by rather a circuitous route. Boney had often accompanied his young mistress to the school and was familiar with the way thither as well as with the main entrance and winding stairway of the building.

It was in the showery month of April, and Etta had repeatedly neglected to wear her rubbers when she started for school in the morning, a fault for which she had often been reprimanded.

Now it happened one warm afternoon that a copious shower came down in due April style. The door leading from the dining room out upon the veranda was wide ajar, and Etta's mother, looking out, saw her daughter's rubbers upon the veranda floor near the rug where they were usually deposited when not in use. "There," exclaimed the mother, "that child has gone again without her rubbers and will come home with wet feet."

This sharp remark aroused the attention of old Boney, for he got up from his prone condition on the rug, looked at the speaker, sniffed at the rubbers and lay down again. At this juncture Etta's father quietly picked up the rubbers, carried them over to the school building and handed them to his daughter, whom he met at the upper landing of the stairway. This had been done more than once, Boney generally lying upon the veranda floor where he could easily hear and see what was being done on such occasions, and he had often followed his master and stood by when father and daughter met at the school building.

Now comes the interesting part of our story. A drenching shower came down about three o'clock one afternoon and Etta had, as usual, neglected to take her needed footwear. It happened this time that none of the family was at home. Boney, however, was keeping house in his accustomed place on the rug. Now, what do our readers think the noble animal did. Why, he just picked up both of the rubbers, carried them in his mouth through the driving rain to the school building, up the winding stairway and laid them upon the landing. As if this were not enough, he lay down and faithfully watched his charge till Etta made her appearance, when he politely dropped her property at her feet.

Thereafter Etta's father was relieved of this service, Boney regularly attending to the business himself, and, what is more wonderful still, he never attempted to discharge his duty on a pleasant day.

Query. Was this reason or instinct? If the latter, what is instinct?

L. P. Venen.

OPAL.

"The Opal, when pure and uncut in its native rock," says Ruskin in his lecture on Color, "presents the most lovely colors that can be seen in the world except those of clouds."

While not all of us may share the great art critic's preference for uncut stones, there are few probably who will not join him heartily in his admiration of the brilliant gem from whose depths come welling up tints of so varied hue that we appropriately speak of them as colors at play. Our interest in these colors may be heightened by reading what Ruskin has further to say of them: "We have thus in nature, chiefly obtained by crystalline conditions, a series of groups of entirely delicious hues; and it is one of the best signs that the bodily system is in a healthy state when we can see these clearly in their most delicate tints and enjoy them fully and simply with the kind of enjoyment that children have in eating sweet things. I shall place a piece of rock opal on the table in your working room; and if on fine days you will sometimes dip it in water, take it into sunshine and examine it with a lens of moderate power, you may always test your progress in sensibility to color by the degree of pleasure it gives you."

The Opal is indeed one of the most fascinating of gems; yet often elusive and at times disappointing. Of its freaks and foibles strange stories are told. Gems of brilliant quality are known suddenly to have lost their hues never to regain them, while others previously dull and lusterless have become radiant as the rainbow.

Prof. Egleston, of New York city, relates that a bottle of cut Opals once given him by a prominent jewelry firm because they had lost their color, after remaining in his cabinet for a time regained their brilliancy and retained it. But to have opals regain their color is, unfortunately, far less usual than for them to lose it. The gem often exhibits brilliant colors when wet either with water or oil that disappear when it is dry. Taking advantage of this peculiarity dishonest dealers often keep opals immersed until just before offering them for sale. The experience of having stones so treated as well as others which might with more reason be expected to retain their brilliancy, lose it, has very likely led to the superstition commonly attached to the Opal that it is an unlucky gem. Some authorities, however, trace the origin of the superstition to Sir Walter Scott's novel, "Anne of Geierstein," in which the baleful influence of the Opal plays a prominent part, and it is stated that within a year of the publication of the book the price of Opals declined fifty per cent in the European market. Even if the superstition did not originate in either of these ways it was probably from a source quite as trivial and it should prevent no one from enjoying the pleasure to be derived from the beauties of this gem.

Chemically, Opal is oxide of silicon with varying amounts of water, the water varying from 3 to 9 per cent. It is, therefore, closely allied to quartz, but differs physically in being softer and not as heavy. Further, it never crystallizes, and it is soluble in caustic potash, which quartz is not. It is infusible, but cracks and becomes opaque before the blowpipe. In sulphuric acid it turns black, on account probably of the organic matter it contains.

Its hardness is sometimes as low as 5.5 in the scale in which quartz is 7 and its specific gravity is from 1.9 to 2.3, while that of quartz is 2.6. On account of its relative softness a cut Opal often does not retain its polish well and requires frequent smoothing. Opals when first taken from the ground are often softer even than the above and for this reason it is usual and desirable to allow

LOANED BY FOOTE MINERAL CO.

OPAL.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

Precious Opal in Matrix (Queensland.)
Precious Opal (New South Wales.)

Wood Opal (Idaho.)
Precious Opal (New South Wales.)
Prase Opal (Germany.)

Precious Opal (New South Wales.)
Fire Opal in Matrix (Mexico.)

them to harden or "season," as it is called, for some time after quarrying, before they are polished.

Opal as a mineral is quite common, so that no one need suppose because he has specimens labeled "opal" in his collection that he has as many precious stones. It occurs in many varieties, and, especially if it contains foreign matter, in many colors. Nearly all silica deposited by hot waters is in the form of Opal, so that the geysers of Yellowstone Park build up cones of Opal and fall into Opal basins. This particular form of Opal is known as geyserite, and it is often differently colored by different ingredients.

Wood is often preserved by silica in the form of Opal, the siliceous waters taking away the wood and replacing it by Opal, grain by grain, with such delicacy and accuracy that the structure of the wood is perfectly maintained. The minute shells which diatoms make consist of Opal, and when these dead shells accumulate to form deposits of some extent we call the powdery substance tripoli and use it for polishing silverware and other metals. Then there are hyalite, a variety of Opal looking like transfixed water, so clear and colorless is it; hydrophane, a translucent variety which sticks to the tongue and becomes more nearly transparent when soaked in water; cacholong, a porcelain-like variety, and menilite, a concretionary variety.

Common Opal varies from transparent to opaque, being most often translucent and sometimes exhibiting the peculiar milkiness of color which we call opalescence. It has sometimes a glassy, but often a waxy luster, the latter when pronounced giving rise to the varieties known as wax Opal and resin Opal. When Opal has the banded structure of agate it is known as Opal-agate; when it has the color of jasper as jasper Opal, and when that of chrysoprase as prase Opal. But none of these varieties are used in any quantity as gems. This distinction is reserved almost wholly for the variety known as noble or precious Opal. This is Opal which exhibits a play of colors. No essential chemical or physical distinction between noble Opal and other varieties is known. In a large vein of Opal portions will exhibit the play of colors and the remainder will not, but why the difference has not yet been determined. Neither can the origin of the varied coloring; i. e., the iridescence, be determined. Some regard it as due to interspersed layers containing different percentages of water, which break up the rays of light somewhat as a prism does, while others think that minute cracks and fissures through the stone furnish surfaces from which the rays are reflected in different colors back to the eye. Some Opals which are dull and lusterless when dry exhibit considerable play of color when immersed in water, and this fact seems to favor the first theory of the cause of the iridescence, but the subject is not understood. The character of the play of colors differs in different Opals, and this gives rise to different varieties. The true noble Opal has the color quite uniformly distributed. When the color appears in flashes of red, yellow, etc., the stone is known as fire Opal; if blue as girasol, and if chiefly yellow as golden Opal. When the patches of color are small, angular and uniformly distributed it is called harlequin Opal, and if these are long and somewhat parallel, flame Opal. These colors are not, of course, inherent in the stone, its color varying from colorless to opaque white. The black Opals sometimes seen and highly prized by some are usually artificial, and are made by soaking ordinary Opals in oil and then burning oil on them. The brilliancy of the stone is thus increased, but it is usually fragile and liable to lose color.

Any Opal will lose its play of colors on being heated too highly, hence possessors should avoid subjecting them to more than ordinary heat. It is the variety and brilliancy of their changing colors which give to Opal nearly all its desirability as a precious stone, for, as has often been remarked, the qualities of hardness, transparency and rich body color which give to most other gems their value are lacking in the Opal. But together with the beauty of its changing colors Opal possesses an advantage over all other gems in that it cannot

be successfully imitated. It is said that the Romans were able to make artificial Opals closely resembling the real, but, if so, the art has been lost never to be recovered, and we may hope it never will be. Hence, however much danger there may be in buying an Opal that it has not been properly "seasoned," or may not retain its color, the purchaser may at least be sure he has an Opal and not an imitation. The stones are usually cut in the oval form known as en cabouchon, this cutting being found to bring out their brilliancy better than any facetted form. The brilliancy of the stone may be increased in setting by giving it a backing of mother of pearl or black silk. When a number of Opals are placed together they seem to borrow brilliancy from one another, a fact which is taken advantage of in settings by placing a number together and also by Opal dealers to dispose of inferior stones by grouping them with good ones. For this reason when Opals are purchased they should be examined separately. The value of Opals depends almost wholly on the brilliancy of their coloring and their size. Stones without the play of colors are practically worthless, while stones of ten to twenty carats' weight, with brilliant coloring, may bring several hundred dollars. The most highly valued Opals have long come from the mines of Czernowitza in northern Hungary. These Opals are often known as Oriental Opals from the fact that in early days they were first purchased by Greek and Turkish merchants, and by them sent to Holland. There are, however, no localities in the Orient where precious Opals are found. The rock in which the Hungarian Opals occur is eruptive, and of the kind known as andesite. It is considerably decomposed, and the Opal occurs in clefts and veins. There is little doubt that it was from these mines that the Romans obtained the Opals known to them, and the output has been quite constant since.

It is said that the Hungarian Opals are less likely to deteriorate than any others. Still the danger of deterioration is not great in any Opal. The other important countries from which precious Opals are obtained are Mexico, Honduras and Australia. The Mexican Opals are mostly of the fire Opal variety. They are mined in a number of the States of the Republic—Queretaro, Hidalgo, Guerrero, Michoacan, Jalisco and San Luis Potosi. The oldest mines are in the State of Hidalgo, near Zimapan, where the Opal occurs in a red trachyte. Most of the Mexican Opals on the market at the present time, however, come from the State of Queretaro, where mining for them is conducted on a more extensive scale. The Opal here occurs in long veins in a porphyritic trachyte, and is mined at various points. The stones are cut and polished by workmen in the city of Queretaro who use ordinary grindstones and chamois skins for the work and are said to receive an average wage of 23 cents a day.

The Honduras Opals reach foreign markets but rarely and usually uncut. The mines are in the western part of Honduras, in the Department of Gracias. They are little worked, but there is no doubt that extensive deposits exist which might afford a good supply of gems if they were properly exploited. The Australian Opals come from several localities, the most prominent at the present time being White Cliffs, New South Wales. The matrix is a Cretaceous sandstone which has been permeated by hot volcanic waters. Shells, bones and other fossils are found here entirely altered to precious Opal, making objects of great beauty. In 1899 Opals to the value of $650,000 were sold from this single region. There is no doubt that the present popularity of the Opal is due to some extent to the supply of beautiful stones which has come from these mines at prices at from one-third to one-tenth those of the Hungarian stones. Other localities in Australia whence precious Opals are obtained are places on the Barcoo River and Bulla Creek, Queensland, and occasional finds in West Australia.

No localities in the United States yelding precious Opals in any quantity have yet been discovered. Some good stones have been cut from an occurrence in Idaho, and some other minor finds have been made, but they possess

little commercial importance at present.

Opal does not seem to have been extensively known or used by the ancients, although we know the Romans prized it highly and ascribed to it the power of warning against disaster. The Roman Senator Nonius owned one set in a ring which was said to be valued at nearly a million dollars. History records that for refusing to sell the stone to Mark Antony he was sent into exile. The next most famous Opal in history is one owned by the Empress Josephine which was called "The Burning of Troy," on account of the brilliancy of the flames which shot forth from its depths. The present whereabouts of neither of these gems is known. A large Mexican Opal, now in the Field Columbian Museum, is carved in the image of the Mexican sun-god, and has a setting of gold representing the diverging rays of the sun. This gem is very ancient and is believed to have been kept by the Aztecs in a temple, so it is probable that the Aztecs knew and prized Opals.

The Arabians believe that Opals fall from heaven with the lightning's flash, a beautiful fancy, indeed. Modern usage makes the Opal the birthstone of the month of October, some of the properties assigned to it being that it has the power of making its wearer a general favorite, enhancing the keenness of his sight and shielding him from suicide.

October's child is born for woe
And life's vicissitudes must know;
But lay an Opal on her breast
And Hope will lull those woes to rest.

OLIVER CUMMINGS FARRINGTON.

THE CROCUS.

"Rest, little sister," her sisters said—
Violet purple and wild-rose red—
"Rest, dear, yet, till the sun comes out,
Till the hedges bud, and the grass blades sprout.
We are safe in the kindly earth, and warm—
In the upper world there is sleet and storm.
Oh, wait for the robin's true, clear note,
For the sound of a drifting wing afloat;
For the laughter bright of an April shower
To call and wake you, sweet Crocus flower."

But brave-heart Crocus said never a word,
Nor paused to listen for note of bird,
Or laugh of raindrop * * * In rough green vest
And golden bonnet, herself she dressed
By the light of a glow worm's friendly spark,
And softly crept up the stairway dark,
Out through the portal of frozen mold
Into the wide world, bleak and cold.
But somehow a sunbeam found the place
Where the snow made room for her lifted face.

—MADELINE S. BRIDGES, in Ladies' Home Journal.

MARCH.

The stormy March is come at last,
With wind and cloud and changing skies;
I hear the rushing of the blast,
That through the snowy valley flies.

Ah, passing few are they who speak,
Wild, stormy month, in praise of thee;
Yet, though thy winds are loud and bleak,
Thou art welcome month to me.

For thou, to Northern lands again,
The glad and glorious sun dost bring,
And thou hast joined the gentle train
And wear'st the gentle name of Spring.

And, in thy reign of blast and storm,
Smiles many a long, bright sunny day,
When the changed winds are soft and warm,
And heaven puts on the blue of May.

Then sing aloud the gushing rills
And the full springs, from frosts set free,
That, brightly leaping down the hills,
Are just sent out to meet the sea.

The year's departing beauty hides
Of wintry storms the sullen threat;
But in thy sternest frown abides
A look of kindly promise yet.

Thou bring'st the hope of those calm skies,
And that soft time of many showers,
When the wide bloom, on earth that lies,
Seems of a brighter world than ours.

—Royal Arcanum.

THE DOMESTIC SHEEP.

(*Ovis aries.*)

It was a little strip of fur which adorned a lady's cloak. It was soft and warm and black and curly. The lady called it astrakhan, but the sheep, whose lamb met an early death that its pleasing fine coat might become the covering of someone in far away America, still lives on the steppes of the Far East. Her master and herder belong to one of the wandering tribes which roam about Central Asia. Had the lamb lived to maturity its beautiful fine coat would have changed to coarse hair, very unlike the wool of the sheep we find in America. It would have grown to a large size; it would have had short horns, a very short, flat tail, with great bunches of fat on the haunches at either side.

There would have been among its companions some sheep entirely white; others white with black heads; but in its immediate family all would have been black throughout.

Imagine the little lamb taking the journey across the Eastern continent! Should we follow it in its journey we would find many interesting varieties of its kind. In crossing Syria and Asia Minor we would find the curious, flat-tailed sheep; their tails are most remarkable to one unaccustomed to the sight, for they are long masses of fat, sometimes weighing forty or fifty pounds, and often trailing upon the ground. In this case they are frequently supported by little sledges to relieve the animal of its burden. It seems impossible to understand why these tails should grow to this inconvenient and enormous length, when other breeds near by have practically no tails at all.

Leaving the country of the broad-tailed sheep and passing along the south of Europe, we find in Spain a very important and interesting variety, the Merino sheep. While in the mountains of Spain they are found in the greatest perfection, the breed has spread over many parts of Europe and has been introduced into South Africa, America and Australia. It is noted for the fineness of its wool and is considered by many to be the most profitable of all sheep.

For some reason the Merino sheep has not found favor in the British isles, but we find there many other well known round-tailed varieties.

The Shetland and Orkney breeds have in their fleece soft, fine wool, largely intermixed with hair. They are of small size and horns may be found on both sexes, although they may be lacking in the ewes.

The soft-wooled sheep of Scotland are a breed nearly extinct; they have short horns, lank bodies and short wool.

In Wales we find two races of small size; one lives in the higher mountains, is dark in color, has much hair mixed with soft wool, and horns are found on both sexes. The other race is without horns and is covered with a soft wool. Both varieties are hardy and are noted for their fine flesh.

The Irish Wicklow sheep were originally very similar to the Welsh variety. Among other Irish breeds the Kerry is best known. It is wild in disposition, larger than the Welsh sheep, with the horns frequently absent in the ewes.

The hardiest and boldest of all the British races are the black-faced Heath breed; these have dark colored limbs and faces and coarse and shaggy fleeces.

The Cheviot breed are hornless, with white limbs and faces; they are heavier than the Heath breed, but have less endurance.

The old Norfolk breed of the east of England are strong and active, with horns, which are thick and spiral in the rams; the body and limbs are long, the face and legs black, and the silky wool is of medium length.

The Dartmoor and Exmoor sheep are "the breeds of the older forests, commons and chases." They are of small size, may or may not have horns, have dark or gray faces and have wool of medium length.

The well known Southdowns have no horns; they have dark brown faces, ears

and limbs; the head is always comparatively small, the lower jaws are thin and fine and the space between the ears is well covered with wool.

The Dorset and pink-nosed Somerset breed are in the southwest of England. They are known by their long white limbs and their white faces; the muzzle is sometimes flesh-colored and the wool is of medium length.

Then there are the various long-wooled sheep of which the new Leicester breed is considered first in respect to form and ability to fatten readily. Other long-wooled sheep are the Lincolnshire, the Romney Marsh, the Cotswold, the Devonshire, the Notts and the long-wooled Irish breeds.

There are other breeds less well known and less important, but the breeds of the British isles are by no means confined to that locality. They have been taken to the United States and to other countries. In fact, some variety of domestic sheep can be found in every land, and no animal is more useful to its owner.

In spite of the various breeds, the characteristics of all domestic sheep are similar. They have not the courage and independence of their cousins, the wild sheep of the mountains. These delight to roam to the highest altitudes, some species being found as high as 22,000 feet above the level of the sea. No other animal save the musk ox and the mountain goat can exist at this height. Doubtless the domestic sheep would thrive better if it could escape the low levels and the plains, for, like the wild sheep, it is a mountain-loving creature. It has adapted itself to the lower altitude, but at a great loss of its original characteristics. It has to an extreme extent become a dependent animal, unable to care for itself, totally lacking in courage and resources, very easily frightened and without marked character. An entire flock is easily startled by any unusual noise; thunder and lightning completely unsettles them, and human efforts to quiet them often prove unavailing.

Brehm tells us that "on the steppes of Russia and Asia the shepherds often have the most arduous tasks in preserving their charges. During a snowstorm or thunderstorm the panicstricken flocks disperse in a wild stampede, rushing out into the wastes of the steppe like senseless creatures, and then resignedly suffer themselves to be snowed under or to freeze without making any attempt to shelter themselves from the storm or even to seek for food. In Russia a goat is generally used as a leader for a flock of sheep, but even a goat is not always able to keep the stupid animals under proper guidance. During a thunderstorm they huddle together and cannot be made to move. "If lightning strikes into the flock," says Lenz, "many are killed at once; if fire breaks out in the sheepfold the sheep do not run out, but, on the contrary, sometimes rush into the fire." The best manner of rescuing sheep from a burning fold or structure is to let the sheep dog to which they are accustomed, drive them out.

To a certain degree, however, the sheep exhibits mental capacity. It learns to know its keeper, obeys his call and displays a certain amount of affection and docility towards him. It seems to have a liking for music, or at least it patiently and passively listens to the bagpipe playing of the shepherd, and it has evidently some premonition of impending changes in the weather."

Sheep thrive best on a diet of various dried plants. The botanist Linnæus states that they "feed on three hundred and twenty-seven of the common Central European plants, avoiding one hundred and forty-one. Ranunculus, cypress spurge, meadow-saffron, shave-grass, wild cabbage or skunk cabbage and rushes are poison to it. It is fond of salt and fresh drinking water is necessary to its well being."

The mother usually gives birth to but one lamb, although occasionally there are more. The little creature must first have human care, but later they are permitted to follow their mother, which shows great affection for her offspring.

A sheep may live to be fourteen years of age, though at nine or ten years it will lose most of its teeth and cannot maintain itself by grazing.

JOHN AINSLIE.

THE BEAUTY OF A STORM.

The person standing by the window watching the progress of the storm may see some of its beauty, but he will miss the most vital part—its very spirit.

Perhaps the majority of people looking out of the window this morning exclaimed, "What a disagreeable day!" And so it might seem to those who remained indoors; and, alas! also to many pedestrians who are not attuned to Nature and who have not yet seen the wisdom of providing themselves with suitable attire for stormy weather, instead of foolishly clinging to the old idea that "anything will do to wear on a rainy day."

These very likely were oblivious to the beauty which surrounded them and failed to be touched by the spirit of the storm.

To many besides myself, however, I hope it was a "beautiful morning." When I started forth to walk the wind, which was quite strong, was blowing in fitful gusts, while the rain fell heavily, in spite of which state of things the note of a brown creeper smote my ear cheerily, assuring me that one little friend, at least, was sharing my enjoyment.

After about two hours, during which time the rain had not ceased to fall, I set out on my return walk. The first sound to attract attention, on again setting foot out doors, was the crackling of the needles in a tall pine tree, and I was surprised to note that the rain was freezing on the trees. It had not seemed cold enough. Very soon there was sleet mixed with the rain, which changed again presently to snow and sleet. Then the snow and the wind commenced a mad frolic, and Oh! how beautiful they made the world! Who could be deaf to the deep-toned music of the wind roaring through the upper branches of the trees!

The spirit of the storm entered into my veins and a wild delight seized me. I could have shouted aloud with the mere joy of living. The redbird's call note was as the greeting of a friend, and the hairy woodpecker's loud "pique" seemed to say "Hi! down there; this is a world worth living in!"

It is in such moments as these that our unity with Nature is most strongly felt and our co-partnership with the elements realized. We are as much a part of the great and wonderful universe as the stars or the clouds, the mountains or the sea.

Thus may the storm spirit embrace our spirit as the wind and rain and snow encircle our bodies. If the invisible and visible parts of our being be both equally prepared to face the elements, we shall return from our encounter with them exalted in mind and refreshed in body; with new life in our veins, and in our hearts new wonder at the beauty of Nature in her wilder moods.

ANNE WAKELY JACKSON.

The snow-plumed angel of the north
Has dropped his icy spear;
Again the mossy earth looks forth,
Again the streams gush clear.

—JOHN GREENLEAF WHITTIER.

THE VIOLET.

With the exception of the rose, no other plant is so widely distributed and at the same time so universally admired as the Violet. Not alone is it esteemed because of its beauty and fragrance, but a wealth of romance, of historical associations and mythical lore have clustered around the purple blossoms, endearing them to the poet and scientist alike.

The Violet was formally baptized with the ancient Latin name Viola in 1737. Since that time, by some strange oversight, botanists have allowed the name to remain unchanged. Two hundred and fifty species of the Violet have been described, although a more careful study of the genus has reduced the number to one hundred or more species. Three-fourths of these forms are found in the temperate Northern Hemisphere and the balance in the Southern. Under these diverse conditions of growth the plants assume many seemingly unnatural characteristics. Thus, in Brazil a species of Violet is eaten like spinach, while others found in Peru are violent purgatives. Among certain Gaelic tribes the plants are highly esteemed as a cosmetic, and the ancients largely used the flowers to flavor wines.

Whatever other attributes a plant may possess, it is predestined in large measure to waste its fragrance on the desert air, unless it catches the fancy of the minstrel or tips the bolts that fly from Cupid's bow. In fact, the Violets were originally white, until they were accidentally struck by Cupid's dart, which was hurled at Diana, and since then the petals have been "purple with love's wounds." Hence Shakespeare calls the Violet "Cupid's flower of purple dye." Another reason for the change from white to purple is found in the jealousy of Venus, who, envious of Cupid's admiration of the purity of the flowers, changed them all to blue.

The Greek myth, however, would certainly not be content if it could not more fully account for the origin of the Violet, and so it appears from the classic legend that Ianthea, the most beautiful of Diana's nymphs, while dancing in the woodlands, was pursued by the sun god, and in order to save her favorite the immortal huntress changed her into a Violet. The name Ion was given to the plants by the Greeks after the nymphs of Ionia presented the flowers to Jupiter. The Thunderer evidently saw something more than a mere blossom in the dainty flowers, for it appears that the Violet became a beautiful priestess in Juno's temple, known as Io. In order to protect her from the jealousy of his consort, Jupiter was forced to change the young goddess into a heifer, and whenever she lowers her head to feed, the white violet springs from her perfumed breath as it comes in contact with the soil.

Among the ancients the Violet was the flower of honor. It was the sacred flower of the Acropolis, and the "Athenian crowned with Violets" was a distinction much sought after. Pindar writes of "Violet-crowned Athens," and in the "Cyprea" it is said that Violets were among the perfumes employed by Venus to win from Paris the prize of beauty.

No less esteemed were the purple blossoms among the more rugged people of the North, for a Saxon legend tells how Czernebogh, god of the Vandals, lived with his beautiful daughter in a stately castle. When Christianity swept through Saxony, destroying all evidences of the heathen faiths, the god and his castle were turned into rocks, and the lovely daughter became a Violet, nestling among the crags. Whoever is fortunate enough to discover the hidden flower will restore the maiden and the castle to their original form and may claim this Saxon Flora as his bride.

In Norse mythology the Violet is called Tyr's flower, and this is the first instance in which the modest plant became disassociated from the realm of love and assumed the guise of war. Tyr's violet mantle, however, in later years,

478

COMMON PURPLE VIOLET.
(Viola obliqua.)

LIVERWORT.
(Hepatica hepatica.)

FROM "NATURE'S GARDEN"
COPYRIGHT 1900 BY
DOUBLEDAY, PAGE & COMPANY.

fell upon the great Napoleon, who adopted the flower as his emblem. He was, in fact, called by his followers Pere de la Violette, and upon going into exile Napoleon assured his friends that he would return with the Violets. Hence the flower became the sacred symbol by which his followers recognized each other. When asked, "Do you like the Violet?" if the reply was "Oui" the answerer was not a confederate. If, however, the reply came, "Eh, bien," they recognized a brother conspirator and completed the sentence, "It will appear again in the spring."

During the middle ages the Violet became the chosen symbol to the minstrel and troubadour, of loyalty and faithful love. A blue Violet was the first love token passed by Clemence Isaure through a hole in the wall of her convent garden to her noble lover, Count Raymond, of Toulouse, and in its association as a bridal flower Milton used it to carpet Eve's bower in Paradise.

CHARLES S. RADDIN.

THE ROUND-LOBED LIVERWORT.

(*Hepatica hepatica.*)

All the woodland path is broken
By warm tints along the way,
And the low and sunny slope
Is alive with sudden hope,
When there comes the silent token
Of an April day—
Blue hepatica.

—DORA READ GOODALE.

There are many plants that are closely related to the mythology and folklore of nations. This is even true of many that are native only in our own young country. The Liverwort, or Hepatica, as it is more often called, though it is not entirely free from mythical association among the Indian tribes, does not enter largely into their folklore.

This beautiful plant has, however, been the inspiration of many poets. Helen Chase calls the Hepaticas

"Hooded darlings of the spring,
Rarest tints of purple wearing."

The delicate blue of the flowers is mentioned by William Cullen Bryant:

"The liverleaf put forth her sister blooms
Of faintest blue."

The life of this plant is poetical. During the summer months a luxuriant growth of leaves is produced. As cold weather approaches these lie down upon the ground and are soon covered by the falling leaves, which have been nipped from the trees by bite of the frost king. Soon, too, they are covered with snow. In this warm cradle they sleep through the winter, yet, as it were, with open eyes for the dawn of spring. Had the Hepatica the power of reason we would say that it longed for spring, for after the first few warm days that herald the approach of that season there is activity in every part of the plant. It does not wait to produce new leaves, but in an incredibly short time sends up its flower stalk and spreads its blue, purple or white petals to the warm rays of the sun. The Hepatica is truly a harbinger of spring, and in Eastern North America, from Southern British America to the Gulf of Mexico, its appearance introduces the new season. In the northern portion of its habitat its flowers are among the first to grace the dreary, leafless forests. This Hepatica is also found in Europe and Asia. It is not only a flower of the forests of lower altitudes, but is also found in mountainous regions at an elevation of nearly three thousand feet.

This plant was first described by Linnæus in 1753, who gave it the name Hepatica, as he saw in the shape of the leaf

a resemblance to the form of the liver.

Of the four known species of Hepaticas but one other is found in North America. This species has the lobes of the leaves pointed instead of round. In some localities it is quite as common as the plant of our illustration, and by many it is considered merely a variety of that form.

Bishop Coxe has said:

Flowers are words
Which even a babe may understand.

The word expressed by the beautiful and hardy Hepatica is confidence.

THE SPRING MIGRATION.

I. THE WARBLERS.

In two former papers I told you of some of the birds that spend their winters in the Gulf States. It is my purpose in the present article to tell some of the features of the great spring migration as viewed from a Mississippi standpoint; how myriads of the little fellows in yellow, black, white, and olive-green stop in these forests to rest and feed for a day or two, then under the impulse of a little-understood instinct continue their journey to the region of their birth. The migration takes place in successive waves, till the last one breaks upon us and spring is over.

In early March the first wave rolls in upon us; happy little creatures hop about and chatter among the opening buds and feast on the insect life awakened by the returning sun. On successive days or, perhaps, at intervals of a few days other waves roll in from the far lands of the Gulf and the Caribbean Sea, till the final one beats against these hills and we awake about the first of May to realize that summer, fervid, tropical, is here. For the months of March and April all is bustle among the feathered traveling public; after that the summer residents have things all their own way till the fall migration begins.

As the sun draws near the line you notice that up in the tops of the gum trees are little birds about the size of a savanna sparrow, and, viewed hastily, of much the same coloring. You know they are not savannas, because the savanna never frequents such places. Some of them have probably spent their winter in this latitude; but just now by their restless activity they tell us that the sap has begun to stir and that the great migration is about to begin. Closer inspection with a good glass will show four spots or patches of yellow, one on the crown, one under each wing, and another on the rump, hence the bird's name, the yellow rumped warbler, sometimes known as the myrtle warbler. A month later you will scarcely recognize the males of this species, the dull brown of the winter coat being replaced by the shiny black of his bridegroom's suit.

When the beech buds swell and the jessamine puts forth its little yellow trumpets to announce that spring has actually come, the first great wave comes flooding into the awakening woods. Here come the first arrivals, both sexes in coats of grayish blue, with shirtwaists of brilliant yellow, the male distinguished by a patch of rufous of an irregular crescent shape across the lower part of the throat and upper part of the breast. On fine sunshiny days the parula warbler, for that is his name, loves the topmost branches of the tallest trees; if the day is gloomy he comes down to the lower branches, affording a better opportunity to study him. His only note at these times is an insect-like buzz much in keeping with his diminutive size.

In the lowlands the Halesia or silver bell is putting out its graceful pendulous racemes of purest white, and it is time to look for the next migrant, the hooded warbler, one of the largest and finest of his race. A V of brilliant yellow coming down to the bill, covering the forehead and running backwards past the eye, bordered by a well defined band of intense black, and a back and tail of green slightly

tinted with olive make him a marked bird. Unlike the parula, he cares nothing for treetops or sunshine; a perch on a swinging rattan vine or in a shrub in the dark woods hard by a canebrake is good enough for him.

As soon as the hooded warbler appears we will see the black and white creeping warbler, the connecting link (so to speak) between the creepers and warblers in both appearance and habits. Like our common brown creeper, he loves the dense woods, but unlike him seems to prefer the tops and higher branches. Alternate patches and streaks of white and black without a suggestion of the yellow or olive green so characteristic of his genus make his identification easy. His note is simple and short; in fact the sounds that he emits in his journeys are scarcely worth being called a song.

The flood tide comes about the first of April and lasts two weeks. Prominent among the multitude of visitors you may see a warbler slightly smaller than the hooded but of the same general coloring, yellow, black and green, only in this bird the black is in three patches, one on the top of the head, the others running from the bill back and down. This is the Kentucky warbler, a lover of the ground and of the low growths. There is another that the hasty observer might mistake for the hooded or the Kentucky, and that is the Maryland yellowthroat. The black on the latter is confined to broad bands of rich velvety black below the eyes; the yellow is more of a sulphur than a chrome shade, and the green is more nearly olive than in the two just mentioned. Many of this species make their summer home in this latitude, making their nests and rearing their broods in the mat of vines and weeds along the fence rows. The usual song is wichety, wichety, wichety, uttered with the cheerful vigor that makes the Carolina wren so attractive. During the months of April and May, 1900, I had frequent opportunities to observe two pairs of yellow throats that had built just inside the fence that parallels the railroad; the males, as they caught sight of me coming down the track, would mount the highest weed within reach and sing with all their might, but as I came opposite their perch would drop suddenly down into the weeds and remain there till I was well past, then resume their perch and song as long as I was in hearing.

Another of this family conspicuous for its brilliant coloring is the prothonotary warbler. Yellow breast, head, neck and shoulders, yellowish olive wings and back and darker olive tail render him conspicuous against any woodland background. If you want to see him during these busy April days we must go where he is, i. e., in the cypress or willow swamps. The dark gray festoons of Spanish moss (Tillandsia usneoides) and the tender young green of the cypress leaves afford both contrast for his bright colors and provisions for his larder. Some of this species also nest here, choosing for their homes oftentimes the holes made by some of our smaller woodpeckers in dead willow stubs. I remember one morning seeing a cheerful flock of prothonotary and parula warblers and noticing one of the former leave his companions and fly to a clump of willows where another less brilliantly colored, presumably the female, joined him. Together they inspected the willow stubs, running in and out and up and down the trunks, peering into every cavity. Finally they found one that met their requirements, then, after a short but earnest discussion, flew away through the swamp.

Inhabiting the marshes and swamps is the Louisiana water thrush, a slender brown bird shaped much like the brown thrasher, only much smaller, being about six inches in length as compared with the thrasher's eleven or twelve. A gifted singer, he is very wild and shy, always resenting the intrusion of the lords of creation upon his quiet haunts, flitting quietly on before you in the shadows, evincing his distrust of your motives by an occasional angry "clink." He well illustrates the principle of compensation: though denied the brilliant yellows and greens of his warbler brethren, he surpasses them all in the quality of his song, as free, as beautiful, as wild as the bird himself. All the individuals of this species that I saw in three years' observation were either in the water beeches (Carpinus caroliniana) that grew so thickly along the creek or in the sweet gums

and cypress along the borders of an immense swamp.

As the Louisiana water thrush is the star soloist of the warbler contingent, so the yellow breasted chat is the clown of our woodland troupe. His coloring is vivid but simple, being green with a wash of olive above, lores black, breast bright chrome yellow, other under parts white or whitish. Under most circumstances this bird is shy and difficult to approach, as I learned by personal experience; but when one of his strange moods comes upon him—perhaps it is the approach of the nuptial season that so affects him—he doffs much of his shyness and becomes a veritable clown, making such a profusion and variety of noises that one would fain believe that there is a whole score of birds in the bush or thicket from which the medley proceeds. He darts out of his retreat and flies away over the shrubbery, twisting and turning his body, raising and dropping his tail as if all his joints were of the ball and socket pattern, making as many ridiculous contortions and as many varieties of squeaks and squalls as an old-time elocutionist.

Besides numerous individuals of the species of warblers already named, in the two weeks between April 9 and 23 I saw one or more of each of the following: Yellow or summer, bluewinged, worm-eating, magnolia, golden winged, chestnut sided, prairie, and the redstart. As I write these names they call up mornings spent in the land of the 'possum and persimmon while yet the steamy breath of the dew was going up to meet the fervor of an April sun, and all the air was heavy with the perfume of the blooming holly, mornings of music from a thousand throats inspired by "the new wine of the year." At such times one realizes the force of these two lines from Richard Hovey:

Make me over, Mother April,
When the sap begins to stir.

JAMES STEPHEN COMPTON.

A PET SQUIRREL.

"Grandma, what made those little scars on this finger?" asked Nellie.

"Those," said grandma, reflectively, "were made by a saucy little gray squirrel."

"How?"

"When I was a little girlie, smaller than you, uncle gave me a gray squirrel in a cage for a pet. As we all fondled him he soon became very tame. We often opened his cage door and allowed him to run around the house at will. One day he ran upstairs and played havoc in a feather bed. After that when out of his cage we kept a close watch on him, never allowing him in a bedroom.

"But he had already learned a new trick which he seemed very loth to forget. Every time that he could sneak into a bedroom he would make a bee-line for the bed, tear a hole in the tick and be inside among the feathers in a flash.

"As I said before, everyone around the place petted and handled him and he had never bitten nor scratched anyone. But one day while playing with him he suddenly leaped from my arms and raced upstairs. Just as he jumped upon a bed I caught him. This angered his squirrelship. He turned and savagely ran his long, sharp teeth through my finger. The sores were slow about healing and left these little scars. After that mother would not allow me to let him out of his cage." LOVEDAY ALMIRA NELSON.

FROM KŒHLER'S MEDICINAL-PFLANZEN.

480

ENGLISH WALNUT.
(Juglans regia.)

CHICAGO:
A. W. MUMFORD, PUBLISHER

THE ENGLISH WALNUT AND RELATED TREES.

(*Juglans regia* L.)

Children fill the groves with the echoes of their glee,
Gathering tawny chestnuts, and shouting when beside them
Drops the heavy fruit of the tall black-walnut tree.
—William Cullen Bryant: "The Third of November."

The English walnut, butternut, black walnut, shagbark or shellbark hickory, mockernut or whiteheart hickory, bitternut hickory and pignut hickory are closely related, belonging to the butternut family, or technically the **Juglandaceæ.** They are large, handsome trees, with spreading branches and cleancut leaves. They are of comparative slow growth but hardy and enduring.

The English walnut is a tall, large, handsome tree which undoubtedly came from India. The name walnut is from Walish or Welsch nut; Juglans from Jovis glans, meaning the nut of Jove, and regia, meaning royal, hence the royal nut of Jove. The Greeks dedicated the tree to their chief deity Zeus, who corresponds to the chief deity of the Romans, namely, Jove or Jupiter. At a Greek wedding the nuts were scattered among the guests that Zeus might bless the marriage. The tree was described by numerous ancient writers, among others by Dioscorides, Plinius, Varro, Columella, and Palladius. Medicinal and other virtues were ascribed to the fruit and leaves and even to the shade of this remarkable tree. Arabian physicians used the hull of the unripe fruit and the leaves medicinally, Karl der Grosse (Charlemagne) recommended the cultivation of this plant in Germany about 812. It was introduced into the Mediterranean countries at an early period and extensively cultivated. From these countries it rapidly spread to northern Europe, and about 1562 it found its way into the British Isles, where it is extensively cultivated. It is cultivated somewhat in the United States.

All the other members of the Juglandaceæ are common throughout the United States, either growing wild or under cultivation. The wood of the butternut or white walnut and that of the black walnut is extensively used in cabinet making, furniture making and interior finish, particularly the wood of the black walnut. The earlier craze for black walnut furniture threatened to exterminate the plant, but fortunately (for the walnut tree) the fashion is waning. The wood is heavy, dark brown in color, of medium hardness, easily worked and readily polished, though it does not take the glossy polish of the harder woods, as ebony. Hickory wood is very hard, tough and durable, but it is not suitable for cabinet making, etc., because it warps too much. It is an excellent wood for making handles for tools of all descriptions, oxen yokes, hoops, walking sticks, whiffletrees, wagon stocks, etc. Its tensile strength is enormous, being said to be equal to that of wrought iron.

The seeds (kernels) of the English walnut, butternut, black walnut and shagbark hickory are edible and greatly relished, while those of the bitter and pignut hickories are not edible. Eating too many of the kernels causes distressing dyspeptic symptoms because of the large amount of oil which they contain. Salting the kernels before eating or taking a little salt with them is said to lessen these disturbances. The oil of these nuts is expressed and used as a salad oil and by artists in mixing pigments. The half-grown green fruits of the walnuts are pickled with spices and eaten, but as such relishes have never come into great favor. They are too severe in their action on the intestinal tract, due to the tannin, acids and coloring substances present. The hulls of these nuts are used in dyeing cloth; also the bark of the butternut and black walnut. The leaves and hull of the English walnut and the inner bark of the

roots of the butternut are still quite extensively used medicinally. A decoction of the leaves is said to cure gout, scrofula and rickets. The hulls are recommended in gout and eruptive skin diseases. Fresh leaves are applied as a fomentation to carbuncles. The extract is used as a gargle, wash for ulcerous eruptions and taken internally in tubercular meningitis. The juice of the green hull has been extensively employed as a popular remedy to remove warts, as an external application for skin diseases, and internally as a stomachic and worm remedy. The medicinal virtues of these plants are, however, apparently limited and unreliable.

The nut socalled of the English walnut, black walnut, butternut and hickory nut consists of the kernel (seed) and the inner layer (endocarp) of the fruit coat (pericarp). The endocarp, which is ordinarily designated as the shell, is very hard and splits more or less easily into two equal parts. The shell of the English walnut is comparatively thin and quite easily removed from the kernel. The shell of black walnut and butternut is very rough, very dark in color, thick, and not so easily removed from the seed or kernel. The hickory shell is quite difficult to remove. The kernels are eaten direct or added to cake, cake frosting, and other pastry, or encased by sugar and chocolate by the candy maker. The halves of the shell of the English walnut figure conspicuously in the well known "shell game" of the gambler who seems to be the central figure at county fairs and many circuses.

As already stated, the trees belonging to the butternut or hickory family grow quite slowly, and do not attain their full growth for many years. In our latitude the nuts are planted in the fall when they begin to germinate late the following spring. In order to give the trees free growth they should be planted at least thirty feet apart. They begin to bear fruit at about the tenth year, few nuts at first, but gradually more and more each year, and they continue to bear for many years. The leaves, buds and green fruits have a resinous, characteristic aromatic odor, recalling the lemon. All who have ever handled leaves, green bark and fruit will remember that the juice colors the skin a dark brown which is very difficult to remove.

The fruit of the black walnut and butternut when ripe is gathered, the hulls removed by stamping with mauls, the nuts dried for a week in the sun and then stored for use. The hull of the English walnut and the hickory nut is quite easily removed.

Description of Plate.—A, twig with staminate and pistillate flowers; B, twig with pistillate flowers; C, fruit; 1-6, flowers and floral parts; 7-10, fruit and seed (nut). ALBERT SCHNEIDER.

AWAKENING.

My heart is glad,
And hopes deemed dead now wake to life again.
This morn I heard,
Ere I to conscious thought returnéd had,
The spring song of the sparrows in the rain.

—M. TOWNSHEND MALTBY.

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. IX. APRIL, 1902. NO. 4.

WHAT TIME O' YEAR?

In leafless woods, the purpled wind-flower sways,
And violets, in penciled lines, or blue,
Blossom in gentle groups, and, blanched of hue,
The fern unfolds, by painted orchis sprays.
The columbine, on hills and sandy braes
Swings to the bees, that colored pollens strew
Below its bells, while singing, soared from view,
The meadow-lark still mounts the heavenward ways.

I know thee, April! thine the azure mist,
Lifted and lowered, like a lady's veil,
Before the rims of woodland sunshine kissed;
And thine the lated twilight's golden sail,
When slanting lines of fire and amethyst,
Riot in withered field and sodden swale.

—Eliza Woodworth.

APRIL.

"Here is April!" cuckoo cries
From the tall tree near the skies;
"April! April!" croaks the frog
From his dank hole in the bog;
"April!" sings the thrush again
From his clay nest in the lane.
April, 'tis thy merry weather
Makes the wild colt burst his tether;
April in his royal dower
Has soft sunbeam and sharp shower;
April is the very soul of youth,
Eye of love, and heart of truth—
That is April.

—Walter Thornbury, "The Twelve Brothers."

THE BLACK-CHINNED HUMMINGBIRD.

(*Trochilus alexandri.*)

To the ornithologist who may be so fortunate as to visit Southern California in the spring, when Nature has put on her holiday attire, and everything appears at its best, our friends, the feathered midgets, will contribute not a little to the pleasure of his stay.
—Benjamin T. Gault.

The Black-chinned Hummingbird has a long and narrow range extending along the Pacific coast from Southern British Columbia southward into Southern Mexico, where it passes the winter. Eastward its range extends to Western Montana, Western Colorado, New Mexico, and Western Texas In some portions of this range it is very abundant, while in others that are apparently as well suited to its habits it is rare, or never seen at all.

This Hummingbird, which also bears the name Purple-throated and Alexandre's Hummingbird, is very similar in its habits to our eastern ruby-throat. Even in its call notes and antics while wooing its mate it is almost a counterpart of the eastern species.

Next to the Anna's hummingbird, the Black-chinned is the most conspicuous of all the hummingbirds that frequent southern California. At twilight it is a frequent visitor to the orange groves, and later, as night approaches, it retires to the mountain sides, where, with numerous individuals of its own kind and other birds, it finds a resting place through the dark hours.

Mr. B. T. Gault has related an interesting anecdote that occured in his experience with hummingbirds. He once found a nest of the Black-chinned species in which there were eggs nearly ready to hatch. Wishing the nest, which was an exceedingly fine one, he cut the branch only to find the eggs of no value as specimens. Finally, finding a nest in which there were two fresh eggs, he took them and substituted the two older ones. The female bird watched this action from a nearby branch. Returning a few days later, he was surprised to find two little naked worm-like bodies in the nest. Naturally satisfied and pleased over the result of his experiment he says: "The old bird seemed pleased too, as she watched me from a neighboring branch, while arranging her feathers, evidently wondering why I should take such a deep interest in her treasures. And well she might be pleased, for incubation had been robbed of all its tediousness in this case and the pair acting on this assumption undoubtedly hatched another brood, but not in such haste, I venture to say."

The nests are delicate affairs, and in many cases resemble small sponges, readily assuming their normal form if the edges are pressed together. The inner cup is seldom more than one inch in diameter. The walls are usually composed of the down of willows. This is firmly woven by an unsparing use of spider web. Usually a few small leaves and scales of willow buds are attached to the outer face, evidently to give it stability.

It has been stated that hummingbirds invariably lay but two eggs in each set. The female Black-chinned Hummingbird seems to be at least one of the exceptions that prove the rule. Major Bendire says that "nests of this species now and then contain three eggs, all evidently laid by the same female, and such instances do not appear to be especially rare."

The Black-chinned Hummingbird is like all the other birds of its kind. Always inquisitive, never afraid to combat a foe and always active, the lines of Jones Very are especially applicable to its character:

Like thoughts that flitted across the mind,
Leaving no lasting trace behind,
The humming-bird darts to and fro,
Comes, vanishes before we know.

FROM COL. CHI. ACAD. SCIENCES.

481

BLACK-CHINNED HUMMINGBIRD.
(Trochilus alexandri.)
About Life-size.

THE AUTOBIOGRAPHY OF AN ANTELOPE.

I cannot tell you the exact date of my birth. As I was separated from my mother at a very early age, this lack of knowledge on my part, I think, should be excused. But Polly has often told me it was the second day of April, 1866, that I came into her possession.

On that particular morning the wind was very high and had a stinging bite in it and my mother, after giving me my breakfast, left me nestled down in a bunch of tall, dry grass, and went out for her own breakfast.

I soon fell asleep. How long I had slept I do not know, when I was suddenly aroused from my comfortable nap by a large, dark animal snorting right over me. Of course, I was very much frightened and wished my mother would come to me. If I had not been so shaky on my legs I would have run away in search of her, but my feet had an uncomfortable way of getting too far apart, and my body seemed entirely too heavy for my legs; so I lay very still, hoping that this strange object might pass on and not disturb me. But a few moments later there bent over me what I soon after learned was a man.

"Hello!" he said, "here is a baby antelope. There—don't struggle so, or you will break your pipe-stem legs."

Soon I found that it was useless for me to try to free myself from his grasp, for while he was not at all rough, he held me quite firmly. Then I began to shiver from fear; also from the cold wind.

"Poor little fellow—he is cold," the man said, soothingly, and he took a blanket from the pommel of his saddle and wrapped it around me. Then, mounting his horse, with me still in his arms, we set out across the prairie. After about half an hour he stopped at a gate, where there were several log cabins huddled together.

"Polly! Come here, Polly!" the man called, and a little flaxen-haired girl came running from one of the cabins.

"What is it, papa?" she called, as she opened the heavy gate.

"It is a new pet for you—a baby antelope," and he handed me down to her.

Polly put me on the ground and lifted the blanket from around me.

"Oh, the funny little darling!" she cried. "Papa, he is all legs and spots, and—and ears."

"Yes," the man replied; "he will soon lose his spots, but his legs and ears will stay with him, and it won't be very long until he will show you how he can use those long legs of his."

The man rode away, and Polly carried me into the house, where everybody handled and looked at me, all of which made me feel forlorn indeed. But when Polly put me into a box half full of nice, clean hay, in a sunny nook between two of the cabins, I felt that the best thing for me to do was to lie down and go to sleep.

After a comfortable nap I awoke, feeling very hungry, and began to call feebly for my mother. But it was Polly, henceforth my foster mother and beloved friend, that came in answer to my call. She carried me into the kitchen, where a bottle, with a quill wrapped with a soft rag for a stopper, was standing by the fire. Polly took the bottle and put the stopper into my mouth. The rag was not pleasant to my taste, and the quill, although disguised by many soft wrappings, was hard and unyielding. Naturally, I objected, but Polly persisted, and after a while I got a taste of the warm milk that flowed through the quill. Then I ceased to struggle and proceeded to take my dinner in the only way I knew.

At an early age I was taught to eat cornmeal and wheat bran, both of which I liked very much.

Soon the yard became entirely too small for me. I longed to go outside, where there was room for me to use my legs, and I got to watching for the gate to be opened. Polly noticed my desire to get outside the gate, and one day when I was standing near it, looking out through a crack in the fence, she came and put her arms around my neck.

"Lopez," and her voice had a note of sadness in it that I had never heard be-

fore, "it is because I love you so that I keep you shut up in this yard. A big, wicked panther lives near here, and he might carry you off, just as he did my little lamb. I never told you about it before, because I did not want to make you feel sad, and—and, Lopez, I thought maybe you would feel jealous if you knew how much I had cared for something else."

I tried to make her understand that I was not in the least jealous of the dead lamb; also that the fact that a panther lived near the ranch did not alarm me. I longed for freedom—glorious freedom—and felt that there was no animal of the plains that I would not willingly enter the lists against in a foot race.

One bright morning, soon after this, Polly's father opened the gate, at the same time saying to her, "I am going to turn Lopez out for a little while this morning and let him stretch his legs and eat some grass."

"Oh, papa!" she cried; he will run away, and the panther will catch him."

"Oh, no," her father replied; "he will come back, and you need not fear the panther at this time of day."

Caution is one of the characteristic traits of my family, so I approached the open gate slowly and stood looking out for a few moments. The ranch is situated on the bank of a small stream, which here swings around, forming a deep crescent. Lying within the loop, between the stream and a low range of hills, which just above the house flattens down to a ridge, is a lovely valley, level as a floor, and perhaps a mile and a half in length. At the widest point it is not over three-quarters of a mile wide and narrows down to a point at each end of the crescent. When I saw this beautiful playground my heart leaped with joy, and I sprang away with the fleetness of the wind. When I had tired myself out running around the valley I came back to Polly, who still stood by the open gate.

After this Polly allowed me to go out every morning, and again late in the afternoon; and a little later I had perfect freedom, going and coming when it pleased me. I never stayed out at night, however, and but seldom went beyond the beauitful valley, which was my playground.

One warm day in midsummer Polly and her father came out to the live-oak tree by the gate, in the dense shade of which I usually took my noon nap. Polly was carrying her little work basket and some bright red ribbon. Her father had a strap of leather and a small bright buckle. I got up at once and went to them, curious to know what they were going to do, besides the scarlet ribbon was very attractive. I soon saw that they were making me a collar. The strap was measured to fit my neck and then covered with the ribbon. Then the buckle was put on and a very large bow of ribbon, which showed off handsomely against the white of my neck and breast, finished the collar.

Soon after I learned the utility of this collar. It was early morning, and I had gone over the ridge and was quietly feeding. Suddenly I raised my head and saw a man, not fifty yards away, with his gun leveled toward me. I looked at him very straight, and he lowered his gun and went away. My bright collar had saved my life.

One bright November day I had gone to the top of the hill and was looking away over that beautiful plain, when Polly came and stood by me, her hand resting gently on my neck. Suddenly the thought came to me that it would be a fine thing for Polly and I to go away and live on the plains. What a free and happy life we would lead! We probably would find other antelopes, and Polly in time might learn to run as fast as I.

As this idea took shape, I determined to try it at once. So, without giving Polly any warning, I sprang away and ran a short distance, then turned around and invited her to come on. She, thinking that I wanted to romp, came after me; but when she could almost touch me, I ran away as before, and again she came after me, laughing with glee. This maneuver I repeated several times, all the time going further out on the prairie. At last Polly stopped and looked back. Then, to divert her attention, I put forth all my efforts to draw her into a romp. First, by running around her in a circle, and then stopping near her to jump up

and down with my legs very stiff. This always amused her greatly, and it succeeded this time. She laughed and ran after me, trying to catch me, but I dodged first one way and then the other, just allowing her fingers to touch me, then slipping away from her, but all the time going further out on the prairie. At last Polly grew tired and stopped to look around her. She gave a little gurgling cry of terror that brought me to her side at once.

"Oh, Lopez!" she cried, "Lopez, I don't know the way home. It all looks alike, and I have forgotten which way we came." She clasped her arms around my neck and cried bitterly.

"Oh, Lopez!" she wailed, "don't you know the way home? You know, animals are smarter about such things than little girls."

I did know the way perfectly well, and Polly's grief hurt me so that I was strongly tempted to lead her straight back to the ranch; but I reasoned that it had cost me considerable effort to get her this far, and why should I now turn back? Besides, to me, there was no reason why Polly should not be perfectly happy in this new and free life, when she should become accustomed to it. And why should she not adapt herself to my mode of life as easily as I had myself to hers?

Reasoning thus, I deliberately started in the opposite direction to the ranch, walking slowly, with Polly by my side.

Thus we wandered on for perhaps an hour, then I stopped to graze, and Polly sank down on the grass to rest. But soon she sprang up, saying: "This won't do, Lopez; we must go on and try to find home. Just see how low the sun is." And then she began to cry.

We had started out early in the afternoon, and the warm sunshine made the air very comfortable. Now the sun hung, a great red ball, just above the dark line that marked the union of sky and plain, and the chill of evening was fast coming on. We wandered on, apparently the only living creatures on this vast plain—on and on, until the last ray of sunlight had been swallowed up by the dusk of evening. The sky was thickly dotted with glittering, twinkling stars, and still we wandered on. A band of white appeared just above the eastern horizon, quickly followed by the moon, which filled the lonely plain with the softened glory of its light, and still we wandered on.

After what seemed to me a very long time, Polly sank down by a bunch of tall grass, and I lay down close by her side. She slipped her hand through my collar and soon fell asleep. As the night grew colder, Polly nestled closer to me, and as we had a thick bed of dry grass we were tolerably warm.

Polly slept quietly, and now I, too, fell asleep, and was only awakened by the broad light of day.

I got up and went to grazing near where Polly was lying still asleep. Soon I saw a wolf go from the carcass of a dead cow to a pool of water and drink. Being quite thirsty, as soon as the wolf had gone away I went to the pool myself and drank. Then, thinking Polly might be thirsty, too, I went back to her and rubbed my nose against her face to wake her. She sat up and looked around her in a dazed sort of way for a few minutes, then stood up and strained her eyes, first in one direction and then in another. At last she turned to me, and I could see that her lips were quivering.

"Lopez, I think there is water where those small trees are growing; anyway, we will go and see."

When we reached the pool Polly knelt down and drank, and then gathered and ate several handfuls of red haws from the scrubby little trees that grew around the pool. We then started on, walking as fast as Polly could.

We had gone on for perhaps two hours, when I insisted upon stopping to eat some more grass. Polly pulled at my collar. "Oh, Lopez, come on," she said, a little crossly. "If I can do without something to eat, surely you can, too." But I would not go, and she sat down in the grass to wait for me.

When we started on again I noticed that Polly was shivering. The sun had disappeared behind a misty veil of clouds and it was much colder than it had been in the early morning. Later in the day we came to a deep ravine. A few pecan trees grew along its banks, and here

Polly gathered some of the fallen nuts and ate them, while I ate my dinner of grass.

We found a place where a smooth trail crossed the gully. This we followed until it broadened out and was lost in the prairie grass.

The sky was now a dull slate color, and little feathery flakes of snow were falling. I could see a dark streak in the distance, which I knew must be timber. Instinct taught me that here we should find shelter, and towards this we were hurrying. Little drifts of snow were gathering in Polly's flaxen hair, and her hands were purple from cold. She stumbled often, sometimes quite falling down, but she would get up and struggle on. The timber still seemed a great way off, when Polly stopped.

"It is no use for me to try, Lopez," she said; "I can't go any further. You will have to go on alone," and she sank down into the snowy grass.

Now, this was a terrible fix to be in. The storm was growing worse every minute, and I knew that it must be almost night. I would run around Polly and stamp my feet, then rub my nose against her face, trying to persuade her to get up and go on, but she would only say, "Poor Lopez, I can't go any further." After awhile she would not notice me; then I knew she was asleep."

A feeling of despair was coming over me, when I saw two men, riding toward the timber. I ran out, so that I was directly in their path, and stood facing them, stamping my feet. It was evident that they were watching me with some interest, and when they were near me the older of the two exclaimed, "Why, that is Polly Vinson's pet antelope. Rope him, Bob, and we will take him home!"

The young man loosened a coil of rope from the pommel of his saddle and began to swing a loop above his head; but before the loop could descend I sprang away and ran to where Polly was lying, now almost covered with snow. The two men started on, and I ran round and round and stamped my feet. I was almost frantic.

They stopped again, and the younger one came to us. He got off his horse and bent over Polly, then turned and called to his companion, who was now coming toward us:

"Mr. Dawson, here is little Polly herself, and I fear she is dead." He lifted Polly up and shook her, rather roughly, I thought. "Polly! Polly!" he cried, "wake up and tell me how you came here."

Polly opened her eyes and sleepily looked at the young man. "Oh, Mr. Bob," she said wearily, "Lopez and I are lost. Won't you please take us home?" Then she leaned her head against him and closed her eyes again.

He quickly pulled off his overcoat and wrapped it around Polly, and handed her up to the older man. Then, tying the end of his rope through my collar he mounted his horse, when we started swiftly toward the timber. To be tied was an indignity that I had never before submitted to, but now I was so glad to have some help with Polly that I made no resistance.

Very soon were were at the Dawson ranch. Indeed, Polly and I, without knowing it, had been going straight to the ranch, and were not more than a mile away when she gave out and went to sleep in the snow.

When Polly was warm and had eaten something, Mr. Dawson put her to bed, and Mr. Bob took me to the warm kitchen, where I had a nice supper of wheat bran. While I was eating Mr. Dawson came to the kitchen and patted me on the neck. "Brave Lopez," he said, "you saved the life of your little mistress."

After a few minutes the young man stood up. "Mr. Dawson," he said, "I am going to ride to Vinson's to-night and let him know that his child is safe."

"What," cried Mr. Dawson, "ride ten miles through this storm? You must not think of such a thing."

"Yes," replied the young man, quietly, "I shall go. Blackbird will carry me there safely, and I shall only be doing as I would be done by."

A little later I heard him ride away, and then I went to sleep.

Alice Moss Joyner.

FROM COL. CHI. ACAD SCIENCES.

482

BURROWING OWL.
(Speotyto cunicularia hypogaea.)
½ Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

THE BURROWING OWL.

(*Speotyto cunicularia hypogaea.*)

The Burrowing Owl is a denizen of the prairies and plains west of the Mississippi and the Missouri rivers. It is found from localities somewhat north of the United States as far to the southward as Guatemala. In some parts of this large area it is exceedingly common, and it is the only representative of the owl tribe that inhabits, in any numbers at least, the treeless regions of the western states.

Unlike other species of owls, the Burrowing Owl is especially fitted for a subterranean mode of life. It will make its home in the burrows of the various animals that inhabit the prairie regions. These birds are social and live in colonies consisting of several pairs. Some Indians have claimed that it retires into its burrow at the approach of winter, and there remains in a torpid condition during the cold weather. Careful observers have, however, shown that this is not the case. It may be said that, except in the northern part of its range, where the winters are severe, it is resident wherever found and not migratory. It is probable that it would not be migratory at all were it not that the animals upon which it feeds are not obtainable in severe weather. Investigation has proved that the stories of the confidential relations existing between the Burrowing Owl, the prairie dog and the rattlesnake are pure fabrications of an imaginative mind, greatly strengthened by additions as they are passed from person to person. The only foundation for these stories is the fact that this Owl and also the rattlesnake do occasionally enter the burrows of the prairie dog. Dr. Coues has said "that the Owls live at ease in the settlements and on familiar terms with their four-footed neighbors is an undoubted fact; but that they inhabit the same burrows or have any intimate domestic relations is quite another thing. It is no proof that the quadrupeds and the birds live together that they are often seen to scuttle at each other's heels into the same hole when alarmed, for in such a case the two simply seek the nearest shelter independently of each other." It is not at all strange that the snakes should also enter these holes. It may be that they do so for the want of some other retreat on a broad expanse of prairie, but it is much more probable that they are in search of food, either in the form of young dogs or the eggs of the Owl. Though the Burrowing Owls are found with the burrowing mammals, they do not occupy the same holes with them and do without doubt drive them out if they wish to preempt the burrows for their own use.

Though the Burrowing Owl probably obtains most of its food in the early twilight, it is frequently "in motion on the brightest days, capturing its prey or evading its pursuer with the greatest ease." Like the sparrowhawk, it frequently hovers in the air and drops upon its prey. Its food consists of the smaller rodents, including the young of the prairie dog, frogs, fish, lizards, snakes and insects of various kinds. In fact, its food is so varied and consists of noxious animals to so great an extent that it is of great service to the agriculturist. Dr. Fisher says: "In summer and fall, when grasshoppers and crickets are exceedingly abundant on the western plains, the Burrowing Owl feeds almost exclusively on such food. Like the sparrowhawk, this little Owl will chase and devour grasshoppers until its stomach is distended to the utmost." It is rare and only when pressed for food that it attacks and kills other birds.

Dr. C. S. Canfield gives the following

account of its nesting habits: "I once took pains to dig out a nest of the Burrowing Owl. I found the burrow was about four feet long and the nest was only about two feet from the surface of the ground. The nest was made in a cavity of the ground, of about a foot in diameter, well filled with dry, soft horse-dung, bits of an old blanket and the fur of a coyote that I had killed a few days before. One of the parent birds was on the nest, and I captured it. It had no intention of leaving the nest, even when entirely uncovered with shovel and exposed to the open air. It fought bravely with beak and claws. I found seven young ones, perhaps eight or ten days old, well covered with down, but without any feathers. The whole nest, as well as the birds, swarmed with fleas. It was the filthiest nest I ever saw. There are few birds that carry more rubbish into the nest than the Burrowing Owls, and even the vultures are not more filthy." In this nest Dr. Canfield found scraps of dead animals, both of mammals, snakes and insects.

Major Bendire believes that when these Owls are once mated they are paired for life. He also likens their love note, which is heard about sundown, to the call of the English cuckoo. He says that it is "a mellow, sonorous and far-reaching 'coo-c-oo,' the last syllables somewhat drawn out, and this concert is kept up for an hour or more. These notes are only uttered when the bird is at rest, sitting on the little hillock surrounding the burrow. While flying about a chattering sort of note is used and when alarmed a short shrill 'tzip-tzip.' When wounded and enraged it utters a shrill scream and snaps its mandibles rapidly together, making a sort of rattling noise, throws itself on its back, ruffles its feathers and strikes out vigorously with its talons, and with which it can inflict quite a severe wound."

LONGING.

I long for the wild woods and fields in the spring,
For the hills and the streamlets once more.
I long for a sight of all nature, to-day,
When the drear, frozen winter is o'er,

And Spring comes apace, and all nature in life
Is now quickened to action more free,
And the flowers are springing in valley and dell,
And green grows the shrub and the tree.

I long for a sight of the squirrels so gay,
As they spring up the trees on the hill,
I long for a sight of the waters that flow
And that sing as they turn the old mill.

I long for the songs of the birds in the grove,
As they sing, at the sweet early dawn,
And to feel the great heart-throbs of nature in glee—
It is Spring now, and Winter is gone.

—Frank Monroe Beverly.

THE WESTERN PINE SQUIRREL.

Many peculiar things have been written about the red squirrel, or what is called out west, the Pine Squirrel. These frisky little animals are found in great numbers throughout eastern Washington. The northern part of eastern Washington abounds in pine forests, and those regions are a favorite abode for the squirrel.

Next to the large silver fox squirrel and the diminutive chipmunk, the Pine Squirrel is the most handsome, graceful and interesting member of that numerous family found in the Northwest. He is a bright, sprightly little fellow. During the long, bright, sunny days of spring, summer and autumn, the Pine Squirrel makes his home out of doors. His life seems to be one of perpetual sunshine and pleasure.

From early dawn to dusk the Pine Squirrel is on the move. He is never still for an instant. You see him scampering up and down the great trunk of a pine, fir or tamarack. Next, he is out on the tip end of a long, swaying branch. Then he is on the ground. The next instant he is running along the body of some prostrate tree.

He is full of curiosity. If you stand and watch him, he will return the compliment with interest. If you are perfectly still, the little chap will venture close and eye you very sharply. He is as quick as a flash, and if you chance to move, away he darts, uttering his peculiar, sharp, chattering call.

Rarely will you see him without something in his mouth. He is very dainty, however, as to what he eats. For all that he lives in the trees and on the ground, yet the Pine Squirrel has a permanent home. When chilling frosts visit the earth and the snow softly descends, the little fellow whisks away to his hole. However, he does not hibernate, like the bear. Not he. Often during the winter the squirrel will come out and take a view of the upper world. But this he does only when the weather is fine. He never shows himself when it is bitter cold and when storms prevail.

The Pine Squirrel leads no butterfly existence. He has the prudent forethought of the ant. He enjoys life and sports in the sunshine, but all the while he is carefully storing away a good supply of food to tide him over the winter. His home is generally well selected and his bed is soft and warm. He knows what comfort means. However, this Squirrel has some queer ways. In some parts of northeastern Washington there are a great many mushrooms and toadstools. The Pine Squirrel will spend days in gathering these peculiar growths and carrying them away, but not to his hole. He will carry some of them high up into trees and place them in the forks of branches, where the wind cannot shake them out.

Hundreds and thousands of these fungi will be placed in the forks of tall saplings, bushes, shrubs and even weeds. Some of the toadstools are larger than the squirrel himself, but, like the ant, he will keep tugging away, and finally the little fellow will land them where he wishes to have them placed.

So far as known, the Squirrel never eats the fungi. He does not take any to his hole, and after placing the toadstools in the brush he does not disturb them again. The fungi dries away and may be seen for several years. What instinct prompts the little creature to do this, is a mystery. I have never yet found any naturalist, trapper, hunter or frontiersman who could give a satisfactory explanation of the matter.

The wood rat and magpie will steal every imaginable article about a house, carry it away and secrete it. Most of these articles can not be eaten and are of no possible use to the rat or bird. Perhaps the Pine Squirrel is prompted by a similar instinct.

The Western Pine Squirrel is a perfectly harmless and peaceable animal. He is not known to attack any other animal except the weasel, and then only in self-defense. J. MAYNE BALTIMORE.

THE AUDUBON'S WARBLER.

(*Dendroica auduboni.*)

Audubon's Warbler bears the same relation to the Western United States that the myrtle warbler bears to the Eastern States. It inhabits the forests and thickets of the West from British Columbia southward as far as Guatemala in winter. And, as Dr. Coues has stated, it has rarely been known to pass to the eastward beyond the line of arboreal vegetation, which marks the easternmost foothills and outlying elevations of the Rocky Mountains.

During its migrations it is often associated with the titmouse and the ruby-crowned kinglet. It may be seen skipping about in the tree tops, actively engaged in searching for insects, which it will at times pursue in the air. It may be readily distinguished from the myrtle warbler, which it so closely resembles both in habits and actions, by its yellow instead of white throat, which is characteristic of the myrtle warbler.

Its nest is usually built in cone-bearing trees at a variable altitude of from three to thirty feet. These homes are neatly woven and usually constructed of fine strips of bark, pine needles and twigs. They are lined with fine roots, bark fibers, hair and feathers. In Colorado it is known to breed on the mountain sides at an altitude of nine or ten thousand feet.

The habits of this little warbler are well portrayed by Mrs. Whitman:

> The little bird upon the hillside lonely,
> Flits noiselessly along from spray to spray.

THE SING-AWAY BIRD.

Have you ever heard of the sing-away bird,
  That sings where the run-away river
Runs down with its rills from the bald-headed hills
  That stand in the sunshine and shiver?
    Oh, sing, sing away, sing away!
How the pines and the birches are stirred
By the trill of the sing-away bird!

And beneath the glad sun, every glad-hearted one
  Sets the world to the tune of its gladness;
The swift rivers sing it, the wild breezes wing it,
  Till earth loses thought of her sadness.
    Oh, sing, sing away, sing away!
Oh, sing, happy soul, to joy's giver—
Sing on, by Time's run-away river.

—Lucy Larcom.

ROM COL. CHI. ACAD. SCIENCES.

AUDUBON'S WARBLER.
(Dendroica auduboni.)
3/5 Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

SPRING NOTES FROM FEATHERED THROATS.

IN NEW JERSEY.

That individual unaffected by the first fluttering wings of returning spring migrants is an anomaly indeed. He must ever have been secluded beyond reach of trill or glint of the feathery kingdom, or else is pitifully invulnerable to one of nature's chiefest charms. For who, having listened to the enraptured love-notes and witnessed the extravagant devotion, intermingled with drollest buffoonery, during the progress of some field or forest courtship, is beyond feeling interest and pleasure in these half-human and wholly unique performances? Or who has not felt a thrill of admiration, to be followed by one of commiseration, when one of the hunters of the air made his terrific plunge, hurtling down like an animated catapult, to strike his quarry ere it found cover in wood or thicket? To all those having formed some degree of bird companionship and who live where winter robs them of those friends of the fields and woods—to such returning spring would be incomplete without their coming. The earliest break in winter's shackles tensions their ears to listen for the first returning migrant's note. Of these the last to leave and first to brave the still vigorous, retreating winter gales is Sir Crow. Painted by popular disfavor even blacker than he merits, his departing caw, mingled with the wild goose's "haunks," as they winged southward, barely escaping the first cold wave. His caw has mellowed with his sunny vacation. In place of the discordant medley echoing from the final grove convention will come his spring notes, cawing a domestic cadence half musical, suggesting a chuckle of delight. By twos and threes these black-coated scouts struggle back to former frequentings. In early February, perhaps, when the ambitious sugar-maker is trying for his first "run," he there catches his first glimpse of blue-black sheen as the northward flyer toilsomely sweeps through the naked trees. At this inhospitable season all of his proverbial cunning stands him in good stead, and truly he is a veritable solon of bird wisdom. Nature seemingly compensated for his gloomy dress and awkward flight by bestowing almost incredible sagacity behind his unattractive exterior.

We need not yet listen for other sweeter-voiced arrivals, but while waiting may give ear to some stay-at-home all-winter residents, the chickadee and his crested relative, the tufted titmouse, cheery chirpers and whistlers both, unconquered by the fiercest boreal blasts; the quiet-voiced and colored junco, the industrious creeper and nuthatch, not forgetting that hide-and-go-seek climber the downy woodpecker and his warmer colored, hairy relative. The woodpeckers, with their cheerful taps, trills and chatter, have done much to dispel the gloom of drear and frosty winter days.

But one is forgotten who in nature absolutely refuses to remain unnoticed—Sir Blue Jay—though an acknowledged cannibal and highwayman, he is withal so jaunty and attractive in everything but his voice and his habits as to convince his beholders that he is not half bad. With February's closing days we may listen for the hardier representatives of the sparrow family, those twin aristocrats, the white-crowned and white-throated beauties, the more timid and ruddier fox, and the well-known song sparrow. Being unobtrusive in both song and garb, their first greeting may be missed, but the trained ear will soon catch the cheerful notes from hedge or brush pile, elicited by a chasing gleam of sunshine. These sweet-toned singers will prove a welcome contrast to the tiresome, incessant, complaining notes of their English cousins, who have spent the winter at the granary door or skirmishing in the garbage on the city streets. The sparrows are the beginner's despair in ornithology, but are as interesting in habits, song and appearance as they are numerous and confusing. The observer who can readily dis-

tinguish them at all, from the familiar household "chippy" to the siskins, linnets and longspurs who frequent our latitudes only as erratic winter visitors, is truly to be envied. With March comes that steadfast commoner the robin and his warmer breasted thrush cousin, the bluebird. The former, with his matter-of-fact twitter of greeting, soon supplements it with a bar of his hearty if somewhat unpolished song. But the less intrepid bluebird will wait for a south wind's caress ere his gurgle of delight will float earward as airily as his hovering flight.

Now come two black-coated cousins, the purple grackle and shoulder-strapped redwing of the blackbird family. Field hunters like the robin, but unlike the thrushes, when on the ground they are staid walkers instead of hoppers. These dusky beauties no sooner announce their arrival with songless cackling notes than they hurry away to inspect their last year's nesting haunts, where scrambling clamor ensues for the most desirable locations. Like the crow they lose but little time in awaiting fine weather before preparing for housekeeping. Even before April's soft showers commence falling, their bristling stick nests are in readiness, as are the crows', jays' and hawks', while the owls' wide-eyed nestlings are even then becoming fluffy balls of feathers in their better sheltered hollow-tree nests. But we must pass with but a word of greeting to the arrivals, would we keep pace with their increasing numbers. Now listen to the purple finch as he perches on highest twig, proclaiming his arrival with no uncertain sound. A very torrent of bubbling melody is he, though his breakfast may still be snow-enshrouded below. While he rests may be heard the meadowlark's tremulous, plaintive diminuendo, as he alights from his halting, uncertain flight. Soon will follow the phœbe's name-calling, tail-wagging cry and the barn swallow's mumbling, metallic squeaking. His cliff or eaves-nesting cousin will a little later add his rasping notes as he repairs his plastered nest. In contrast to the swallow's rhythmic chatter comes the oriole's bugle call and flute-like whistle, which at evening was silent, but morning finds vocal. With increasing numbers, as the Mayflowers appear, come the crow-chasing kingbird and his twin-named fish-catcher. The first, with happy tinkling notes, the second with bill-chattering rattle. Again, morning hears the bobolink's ecstatic songburst of tumultuous melody. Like ships he "passes in the night" and heralds his coming as no other can. Now the whippoorwill proclaims his apt naming, as evening closes in, while his nighthawk cousin booms an accompaniment as he wheels through the air above. The wood pigeon's lament comes throbbing through the warm morning air, confirming his right to his other and better known "mourning dove" title. To drown the pigeon's dirge-like plaint may now be heard the rollicking song of the goldfinch, his song and flight dipping in unison as he goes his careless way. With still another contrast comes the clucking cuckoo's grumble as if in excuse for his tardy arrival. Now listen, for the chorus is complete! Though but few have been named, they are best known and with the unnamed larger half compose nature's magnificent if sometimes inharmonious symphony. Among those unnamed are to be found many fully the equals of those so imperfectly represented in the preceding pen pictures. In fact, the wood thrushes and warblers unmentioned are as finished vocal performers as any of those heard in the open. Also in beauty and brilliancy of coloring some of the shyer and more silent wood residents eclipse their brethren of the fields. But birds are not learned in a day. Later on the student's eye and ear will begin to recognize such flashy men of color as Messrs. Tanager, Towhee, Redstart, Waxwings, Redpoll and scores of others making up the lengthy list of warblers, thrushes, wrens, flycatchers and others less well known, especially by voice, which is often discordant in proportion to attractiveness of plumage. These fragmentary glimpses and sound pictures of our flitting friends have been attempted with the intention of introducing them to the ear rather than to the eye. Too much importance is often attached to the appearance to the neglect of aural attractions. Nothing can exceed the pleasure afforded the enthusiast in ornithology when able to readily distinguish his feathered friends by songs, notes, trills,

and twitters making up their repertoires. As their voices greet him when awakening, no calendar is needed to trace the advancing seasons. The new voices added to the morning chorus and its diminishing volume as summer departs gives audible record to the ear familiar with bird-voice harmony. Again, when abroad in pursuit of duty or pleasure, a single note is sufficient to introduce to his ear a new or old-time friend. He well knows the first glimpse will disclose a dull or bright-hued coat, whose owner's eyes are even then scanning him from some well concealed cover. If the learner would fully appreciate the charms of his bird acquaintances he should study each individual until known not only by appearance while at rest, but in every light, shade, attitude and movement, and he should study his voice until it is recognizable whether in full-throated song or modulated call or whistle. An occasional hour or vacation may accomplish much, and that often at our very doors; but to know these breezy, beautiful habitants aright city walls must be left behind.

Museum specimens, except for reference, must be shunned as inert, lifeless and voiceless. The bird only known by appearance is but half known. When known and understood their observers become their champions whose arms and voices will ever be raised to prevent their wanton destruction.

B. F. W. Thorpe.

THE SPIRIT OF SPRING.

It came to me this morning, in my room, and filled my whole being with a subtle feeing of delight and mysterious glad expectancy. When I went downstairs they told me that it was colder than yesterday; that the thermometer registered 14 degrees above zero. But what care I for the thermometer? What does it know about spring?

Spring is a spirit which takes possession of the air, be it hot or cold, and makes one's heart sing for joy.

The crows kept telling me the glad news, "Spring has come!" all the time I was dressing, and it was echoed in the tufted tit's questioning note when he flew round the house to his breakfast on the window sill. When I started out for my morning walk the very air seemed filled with tiny voices proclaiming the good tidings.

I had not gone far before I heard a cardinal singing gloriously, his song answering the one in my own heart; and the theme was ever, "Spring has come!"

But the crowning surprise and joy of all came when I had reached the brook pasture. I stopped, listened and caught my breath; could it be on the 27th of February? Yes, a song sparrow! No one who is unacquainted with the purity and simple charm of this bird's song, which breathes of all that is fair and good, can understand or appreciate the rapture I felt upon hearing it again this morning. Going on a little farther I heard another song sparrow; the two were singing by turns, answering each other in sweetest melody. One could scarcely wait until the other had finished his strain, so eager were they to pour out the good news.

Oh, if you who are tired or dull indoors will only go out these mornings and fill your lungs with the pure air of heaven and your hearts with the rapture of spring, how many of your cares will drop away! Nature's myriad voices will talk to you if you will listen; the birds will sing to you the sweetest music in the world—God's love in melody.

This joy in the beauties of Nature may be yours if you will; do not allow such a precious gift to escape you. It is beyond price, yet free to all. Each year adds to the wonder and value of Nature's treasures; they are ever new, ever more and more welcome with each returning season. Happy are they who know and love them well.

Anne Wakely Jackson.

FROM AN ORNITHOLOGIST'S YEAR BOOK.

FLUTE OF ARCADY.

In Ohio are many wide, grassy fields, covering the rounded hillslopes or filling open valleys. One day in March the world was white with snow, and I heard, as if in a dream, the soft cooing of the doves. Never before had I heard it except on sunny afternoons in pine woods, rich with warm, resinous odors. It is hardly a sound—rather silence perceptible, blending so perfectly with the sunshine, the hushed and brooding stillness of the air, the half-conscious sense of life, that I would often hear it a long while without knowing that I listened—the soft, tremulous cooing of the wood-doves, yet here the earth was white with snow and the air chill.

But the doves were right. Spring was near, and in a little while the feathery grass was nodding in the warm wind, gray and hazy, as the great white clouds swept overhead with wing-like shadows, or shining, each tiny blade like burnished steel, in the sunlight. The cooing of the doves had been only a low prelude; now the air was ringing with melody.

"N'er a leaf was dumb;
Around us all the thickets rung
To many a flute of Arcady."

The fresh, glad songs of the western meadow larks! Everywhere, everywhere, the air was vibrant with the poignant sweetness of their silvery voices; everywhere you might see the shining yellow of their breasts as they rose with strong wing; everywhere you might perhaps chance to stumble upon some nest of woven grasses. Often with arched covering, on the very ground, with the dear little brownish mother bending over four or six white eggs, freckled with cinnamon spots. It is the season of the larks, and earth and sky are more lovely for the magic of their singing. One hardly knows how to describe it in words. Spring o' the year! Spring o' the year! it seems to say to the listener, both in the east and west, but the song of the western meadow lark has a richer melody, a more piercing delight. It seems to talk of forgotten things; of youth and first hopes; first love; it has all the glamour of the far-away, and yet a sweetness of the near. It rises from the thick grass at your feet, yet it mounts towards the blue sky! It is a veritable Flute of Arcady blown with a breath of joy.

ELLA F. MOSBY.

The dogwood blossoms white as snow
Their favors now to rambler show,
And where the Winter's latest drift
Through the dark moss did silent sift,
All blossomed-starred, above the ground
The shy arbutus now is found.

The cloud-capped mountains all appear
With verdant slopes and summits clear;
The sun has lost its soulless glare—
Earth, sea and sky are wondrous fair.

—George Bancroft Griffith.

THE RED-BACKED SANDPIPER.

(*Tringa alpina pacifica.*)

The sandpipers trip on the glassy beach,
Ready to mount and fly;
Whenever a ripple reaches their feet
They rise with a timorous cry.
—Duncan Campbell Scott, "Sandpipers."

Very early in the spring the Red-backed Sandpiper leaves its winter home in the States and countries bordering the Gulf of Mexico and starts on its long journey to the cooler region of the far north. It arrives in Alaska early in May, in full breeding plumage, and the males are soon engaged in prettily wooing the coy females. Mr. Nelson, who had unexcelled opportunities for studying the habits of these interesting sandpipers, well describes their courting habits. He says: "The males may be seen upon quivering wings flying after the female and uttering a musical, trilling note, which falls upon the ear like the mellow tinkle of large water-drops falling rapidly into a partly filled vessel. Imagine the sounds thus produced by the water run together into a steady and rapid trill some five or ten seconds in length, and the note of this Sandpiper is represented. It is not loud, but has a rich, full tone, difficult to describe, but pleasant to hear. As the lover's suit approaches its end the handsome suitor becomes exalted, and in his moments of excitement he rises fifteen or twenty yards, and hovering on tremulous wings over the object of his passion, pours forth a perfect gush of music, until he glides back to earth exhausted, but ready to repeat the effort a few minutes later. The female coyly retreats before the advance of the male, but after various mishaps each bird finds its partner for the summer and they start off house-hunting in all the ardor of a rising honeymoon."

The Red-backed Sandpiper is not a bird architect and it does not build even a simple home. A slight hollow on a dry knoll, which commands a clear view of some body of water, is the site usually selected. Here the eggs are laid, either upon the dry grass already in the hollow or upon a few bits of leaves, twigs and grass hastily gathered and placed without order. After the appearance of the eggs the male seems to realize the responsibility of family cares, for his merry song ceases and he devotes his share of time to sitting on the nest, protecting the eggs with his warm body. That this is the case is shown by the bare patches that appear on his breast at this season.

With such a home as is prepared for their reception, it is not surprising that the little red-backs leave the nest as soon as they are hatched and freely run about. When frightened they readily conceal themselves by sitting on the ground and remaining quiet.

This species exhibits considerable variation in the color of its plumage. In the spring and summer it may be known by the black patch on the belly and reddish color of its back, which is mottled with white and black. At this season it is often called Blackbreast. In the fall and winter the upper parts are brownish-gray in color and the under parts are whitish. It is then frequently called the Leadback. The Red-back is not as active as the other sandpipers and its unsuspicious nature makes it seem quite stupid. Though a beach bird, it is not infrequently met in grassy marshes, and by some it is called the Grass-bird.

A PANSY OF HARTWELL.

I was a Pansy of Hartwell, a dainty little thing, with gold and purple petals, touched with white, and leaves of tender green—"a dear, delicate thing, but fair," so Louise said. I grew below her chamber window, where she had prepared a rich, warm bed of mother earth for me and for hundreds of my kindred. "But none," she said, "no, not one of my kind, was ever so beautiful as I."

I remember my birthland well. Our old home in Hartwell, where Louise and I were born, was surrounded by a wide, rolling lawn, filled with blooming flowers from the time of the first peep of the early March crocus to the stately bloom and decay of the autumn flowers. Here, too, near her window grew a straight, tall maple tree, whose branches stretched far and wide and even touched her window.

I liked this tree because it gave us a pleasant shade when the sun's rays were inclined to be too warm and made us droop and feel so languid and so tired. Delicate, dainty things, as Louise and I, must not have too much sunshine, else we droop and die.

One day I asked Louise if this tree was old. I knew it was by the many deep furrows in its bark, but I loved the music of her voice so much that I often asked her useless questions that I might lift up my head and listen to its melody. Louise then told me its age and much else that I had never heard. She said that with each returning springtime this tree sent up the life-giving sap from its roots, which ran swiftly through the trunk to the branches. Soon on these branches little red buds appeared, then a bloom and finally leaves, and wonderful little wing-like looking keys which held the seeds of the maple tree.

These were strange, wonderful things for me to hear, but I knew them to be true, because Louise told them to me. No one ever doubted Louise, for all her life long she had worshiped at the altar of truth, and, because of her truthfulness, her beauty and her goodness, all things loved her.

Besides giving us moisture and shade, the south wind told me that this same fine old tree held in its forks a home for some little friends of Louise. When the March winds left us and the skies became clear and blue and warm, her friends the robins would return to their old home as they had done for many seasons past, and there under her kindly, watchful care would raise their brood of young.

One day I saw her—I was always watching her—drop a bit of cotton and several strings down from her window. The cotton fell near my bed. I wondered and wondered why she had done this thing. A long time afterward I was told that it was for the use of Mother Robin in making her nest. Father Robin thanked my dear Louise for her thoughtfulness by singing for her his most beautiful notes at the dawn, the noon-time and the evening.

I lived in happiness in that quaint old town of Hartwell, caring naught for its bright skies, wide rolling plains, its peaceful waters, its fruits of tree and vine. I was young; I was happy; I lived near Louise; it was all that I desired.

I remember—but why should I tell you? I am only a little pansy, born, perhaps, for an hour or a day, to bloom and be gathered and die—so the south wind has told me. It must know. "God gave the flowers and birds and all things for man's use and abuse," so you say; but I had thought it different, for I lived in the sunshine of Louise's love and ten-

der care. One day—how well I remember it!—it was a day in sunny, coquettish April—when I heard voices approaching. Nearer and nearer they came, until I felt the presence of my dear Louise with her dark haired friend. I could not see them, for one of my sister pansies held her head so high and haughty that a little pansy such as I could not see or be seen.

This day Louise was more tender than usual. Alas! why is it ever true that dearest love is bought at the price of death and separation?

She bent down, half hesitatingly, and kissed me, touched my petals lovingly, and whispered so gently—only I could hear: "My beauty, my golden-hearted pansy, shall I—must I—give you to my friend?"

The wind gave back my answer. I was sacrificed on the altar of friendship.

Then I felt my heartstrings slowly tugged at, and quivering and wounded and bleeding I was taken from my home, the home Louise had made for me, and placed in a basket with my cousins, the violets, to be carried to a new home, to meet new faces and perhaps make new friends.

Louise and this friend loved each other very dearly. Alas! for me, they loved pansies, too.

Perhaps it was an honor for Louise to have chosen me from among a hundred others, for to her a pansy was the dearest, the daintiest and most coquettish of all the flowers that bloom and die. But, though I felt the honor, I would a thousand times rather have lived to lift my petals to the breezes in my native land without glory and without pain; or better still, death on Louise's breast, with her smiles and caresses, was preferable to honor and glory in a stranger's land. I say this was preferable, but how foolish I am; we pansies have no preference. We of the flower family must take what you of the human family choose to give us.

This friend of Louise's, I knew not her name and cared not to know, carried me very gently with the violets, protecting me from the sun and dust as we went; and when I awoke from my misery and my long, long journey, I found myself an exile, with my kindred, in the far south-land where the birds are always singing, and the flowers are ever blooming, and youth and beauty and old age go hand in hand.

It was a beautiful home to which I was brought. Here I was surrounded with all that a pansy's heart should long for; but I was not happy. I was not content. Soon my face looked sad; my shining green leaves began to wither and droop, and the breath of the south wind became so hot I felt as though I could not live. Then the battle against death began. I longed to live that I might see Louise once more. Then I tried to live for her to whom she had sacrificed me. I made a brave struggle for life, but all in vain. It was the battle of the weak against the strong.

Since life has left me and I have become a spirit flower with my earthly body caged between the pages of a musty old book, which my spirit may enter at will, Louise's friend often holds communion with me. It is then I ask, "Does she love me, or is it Louise, of whom she thinks, for whom she longs when she looks at me so lovingly and talks to me of the old days?

LAURA CRAVENS.

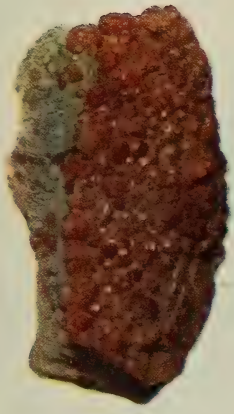
GARNET.

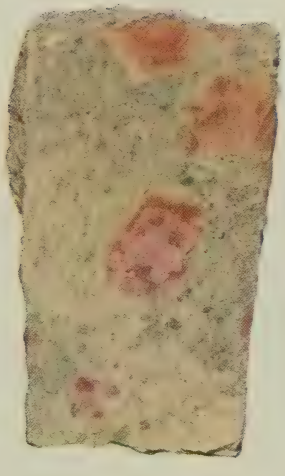
This stone exhibits many varieties of color and of composition. The color probably most often thought of in connection with it is dark red, but it would be a mistake to suppose this the only color which it may manifest. Green, red, rose and brown are other colors which garnet transparent enough to be used as gems exhibits, while among opaque garnets may be found black and many varieties of the shades above mentioned.

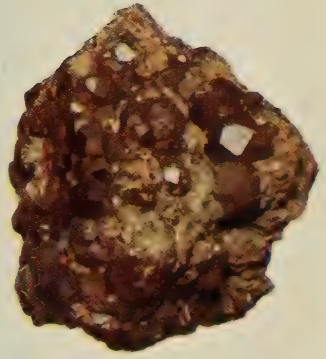
These variations of color are more or less connected with differences of composition which it may be well first of all to consider. Garnet as a mineral is, like most minerals used as precious stones, a silicate. United with the silica the element most commonly occurring is aluminum. If calcium be united with these two the variety of garnet known as grossularite, or essonite, or cinnamon stone, is produced. If magnesium takes the place of calcium, then pyrope is formed. If iron, we have almandite, and if manganese, spessartite. Another variety of garnet, andradite, is composed of calcium and iron in combination with silica, and still another, uvarovite, of calcium, chromium and silica. Though they seem to differ so much in composition, all kinds of garnet crystallize in the same system and are closely allied in all their properties, so that it is always an easy matter to distinguish garnet of any variety from other minerals.

Garnet crystals may be of the twelve-sided form, known as dodecahedrons, the faces of which have the shape of rhombs, or the twenty-four-sided form known as trapezohedrons, the faces of which have the shape of trapeziums. Quite as commonly occur crystals which are combinations of these two forms, and then exhibit thirty-six faces, as in the crystal from Alaska shown in the accompanying illustration. Sometimes the crystals attain considerable size, some perfect ones from Colorado weighing fifteen pounds, while crystals two feet in diameter are reported from North Carolina. A curious feature of garnet crystals is that of often inclosing other minerals. The garnets from New Mexico, for instance, when broken open are sometimes found to contain a small grain of quartz. In the crystals from East Woodstock, Maine, only the outside shell is garnet and the interior is calcite. Other crystals are made up of layers of garnet and some other mineral.

Garnet has a strong tendency to crystallize, and hence is usually found as crystals. The grains of garnet found in the sands of river beds and on beaches, though not often showing crystal form, may be really fragments of crystals. Garnet is one of the most common constituents of such sands because of its hardness and power of resisting decay. These properties enable it to endure after the other ingredients of the rocks of which it formed a part have been worn away. It is quite heavy as compared with the quartz of which the sand is mostly composed, and hence continually accumulates on a beach, while the quartz is in part blown away. In such localities it will always be found near the water line, because the waves, on account of its weight, can carry it but a slight distance inland. Practically all garnet is three and one-half times as heavy as water, and some four times as heavy. Garnet, as a rule, is somewhat harder than quartz, its hardness being 7 1-2 in the scale of which quartz is 7. Some varieties are, however, somewhat softer. The hardness of garnet and its uneven fracture are properties which give it an extensive use for rubbing and polishing wood. For this purpose it is spread upon glued paper in the manner of sandpaper and is used similarly, but it is superior to the latter. Most varieties of garnet fuse quite readily be-







LOANED BY FOOTE MINERAL CO.

GARNET.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

Almandite (Colorado.)
Essonite (Italy.)
Garnet in Matrix (Alaska.)

Garnet in Matrix, polished (Mexico.)

Almandite (Connecticut.)
Garnet (Hungary.)
Uvarovite in Matrix (Canada.)

fore the blowpipe, and the globules thus formed will be magnetic if the garnet contains much iron. The green garnet, uvarovite, is almost infusible, however. Garnet is not much affected by ordinary acids, although it may be somewhat decomposed by long heating.

The name garnet is said by some authorities to come from the Latin word granatus, meaning like a grain, and to have arisen in allusion to the resemblance of its crystals in color and size to the seeds of the pomegranate. The German word for garnet, granat, is the same as the Latin word. Others think the word derived from the Latin name of the cochineal insect in allusion to a similarity in color.

The use of garnet for gem purposes seems to date back to the earliest times. Among the ornaments adorning the oldest Egyptian mummies there are frequently found necklaces containing garnet. The Romans prized the stone highly, and it is a gem very largely used at the present day, its hardness and durability and richness and permanency of color giving it all the qualities desired in a precious stone.

Two varieties of garnet, almandite and pyrope, may exhibit the dark blood-red color especially ascribed to garnet. Almandite or almandine garnet derives its name from Alabanda, a city of Asia Minor, in the ancient district of Caria, whence garnet was first brought to the Romans. The finest almandite for a long time came from near the city of Sirian, in the old province of Pegu, Lower Burmah. While this was the center of supply, it is not known just where the garnets were obtained. Such garnets are still known as "Sirian" garnets. Their color tends toward the violet of the ruby and gives them a high value. There are several localities in Northern India where almandite is mined on a large scale, and the stone is much used in Indian jewelry. Some of these localities are Condapilly, Sarwar and Cacoria. Almandite is also found in Brazil, in Australia, in several localities in the Alps, and in the United States. Stones from all these regions are found suitable for cutting, the only qualifications needed being sufficient size and transparency and good color. The almandite of Alaska shown in the accompanying plate occurs in great quantities near the mouth of the Stickeen river, but has not been extensively cut on account of its being too opaque. Almandite usually occurs in metamorphic rocks, such as gneisses or mica schists; also in granite. It is also found in many gem gravels. From the ruby it can be distinguished, as can all varieties of garnet, by its lower hardness and single refraction of light. In artificial light, too, it borrows a yellow tint, rendering it less pleasing, while the color of ruby grows more intense.

Pyrope, the magnesian variety of garnet, does not differ much in color from almandite. Both are dark red, but while almandite tends toward a violet tone, pyrope shades toward yellow. Pyrope is lighter than almandite, the specific gravity being 3.7 to 3.8, while that of almandite is 4.1 to 4.3. It is also less easily fusible. It rarely occurs in crystals, and where found in place is always associated with the magnesium-bearing rocks, peridotite or serpentine.

It is thus probably always of eruptive origin. Pyrope is a characteristic constituent of the diamond-bearing rock of South Africa, and is the stone known in trade as "Cape ruby." These garnets afford many excellent gems. The home of the pyrope, however, is and has been for many centuries, Bohemia. Here it is found in many localities, but chiefly in the northwestern part, near Teplitz and Berlin. The garnets are found in a gravel or conglomerate of Cretaceous age, resulting from the decomposition of a serpentine. Sometimes, however, they are found in the matrix and often associated with a brown opal. They are found by digging and separated by washing. Though of good quality the stones are small, those as large as a hazel nut being found but rarely. Although the Bohemian garnets have been known for many centuries, the industry of mining and cutting them on a large scale is said not to have assumed any special proportions until the advent of foreigners to Karlsbad. In this way a knowledge of the stones went out to other countries, and a demand sprang up which has led to the establishment of a great industry and made

Bohemia the garnet center of the world. There are over three thousand men employed at the present time simply in cutting the stones, and if to these be added the number of miners and gold and silver smiths occupied in the mining and mounting of the garnets, it is estimated that a total of 10,000 persons are engaged in the Bohemian garnet industry. The stones are used not alone for jewelry and for ornamenting gold and silver plate, but also extensively for watch jewels and for polishing. Excellent pyropes are found in Arizona, New Mexico and Southern Colorado in our own country. They occur in the beds of streams as rolled pebbles, and often associated with the green chrysolite or peridot of the eruptive rock from which they came. They are especially abundant about anthills, being removed by the ants because their size stands in the way of the excavations of the busy insects. The name pyrope comes from the Greek word for fire, and is applied on account of the color of the stone.

Of quite similar origin is the name carbuncle, a term applied to nearly all fiery red stones in Roman times, but now used to designate garnets cut in the oval form known as cabochon. The word carbuncle comes from the Latin word carbo, coal, and refers to the internal fire-like color and reflection of garnets.

The calcium-aluminum variety of garnet, grossularite, cinnamon stone or essonite, is less used in jewelry than those above mentioned. It is usually yellow to brown in color, but may be rose red or pink, as in the specimen from Mexico shown in the accompanying plate. The yellow grossularites resemble in color the gem known as hyacinth and are sometimes sold in place of the latter, but true hyacinth is much heavier and doubly refracting. About the only essonites or cinnamon stones available for gems come from Ceylon. These are of good size and color. Those from Italy, shown in the accompanying plate, are too small to cut into gems, but surrounded as they are by light green chlorite and pyroxene, they make very pretty mineral specimens. Grossularite is almost always found in crystalline limestone.

Green garnets are of two kinds, the calcium-iron garnet, known as demantoid, and the calcium-chromium garnet known as uvarovite. The demantoid garnets come only from the Urals. They have a rich green color and make beautiful gems when good ones can be found. The name demantoid refers to the diamond-like luster which they possess. The stone is also known as "Uralian emerald." Uvarovite, named for Count Uvarov of Russia, also makes valuable gems if found in pieces of sufficient size and luster. It is found in Russia, in Pennsylvania and in Canada. Garnet has long been the birthstone of the month of January.

"By her who in this month is born
No gems save garnets should be worn.
They will insure her constancy,
True friendship and fidelity."

Such are the virtues ascribed to the garnet. That the stone has been known and used from the earliest times I have already remarked. Under the name of carbuncle mention is made of it in the literature of all ages, its impressive feature being usually the brilliant, fiery light which it gives forth. According to the Talmud, the only light which Noah had in the ark was afforded by a carbuncle, and there are many Oriental tales regarding the size and brilliancy of carbuncles owned by the potentates of the East. Occasionally carbuncles were engraved, and some fine garnet intaglios are still known. The greater abundance of the stone in modern times has led to its being less highly prized than formerly, and to its being put to other uses than mere adornment, but it perhaps contributes more largely to the comfort and happiness of the world as it is now used than could ever have been the case when it was the property only of kings.

OLIVER CUMMINGS FARRINGTON.

ANIMAL EMOTIONS.

Through the emotions we are apt to judge ourselves somewhat superior to the animal creation, though perhaps a more thorough study and interest in the "smiles and tears" of the so-called creatures of lesser intelligence would teach us that the emotions play almost as important and distinctive a part in their organism as in our own oversensitive nerve force. I am not speaking of the emotion of fear and anger that is instinctive in all animals, but of the more subtle emotions of joy and grief as visibly expressed. The older epic writers made much of the grief expressed by horses, and their sorrows have formed many an heroic verse. Merrick, in his "Tryphiodorus," says:

He stands, and careless of his golden grain,
Weeps his associates and his master slain.

Says Moschus:

Nothing is heard upon the mountains now
But pensive herds that for their master low,
Struggling and comfortless about they rove,
Unmindful of their pasture and their love.

Virgil, who was probably more conversant with the horse and his interests than almost any other writer of that far-away period, thus writes of the sorrow of Pallas' steed:

To close the pomp, Aethon, the steed of state,
Is led, the funeral of his lord to wait;
Stripp'd of his trappings, with a sullen pace
He walks, and the big tears run rolling down
his face.

In the Iliad, Homer thus renders the emotion of Patroclus' war horses evinced for that hero:

Restive they stood, and obstinate in woe:
Still as a tombstone, never to be moved
On some good man or woman unreproved
Lays its eternal weight; or fix'd, as stands
A marble courser by the sculptor's hands,
Placed on the hero's grave. Along their face
The big round drops coursed down with silent
pace,
Conglobing with the dust. Their manes, that
late
Circled their arched necks, and waved in state,
Trail'd on the dust beneath the yoke were
spread,
And prone to earth was hung their languid
head.

Shakespeare, in "As You Like It," tells of the tears shed by a wounded stag:

The wretched animal heav'd forth such groans,
That their discharge did stretch his leathern
coat
Almost to bursting; and the big round tears
Cours'd one another down his innocent nose
In piteous chase.

All, or nearly all, animals are sensitve to music, which affects them in various ways, and again it is Shakespeare who refers to this sensitiveness in even untrained horses, proving its effect to be instinctive:

For do but note a wild and wanton herd
Or race of youthful and unhandled colts,
Fetching mad bounds, bellowing, and neighing loud,
Which is the hot condition of their blood
If they but hear perchance a trumpet sound,
Or any air of music touch their ears,
You shall perceive them make a mutual stand,
Their savage eye turned to a modest gaze
By the sweet power of music.

There is an ancient account of the Libyan mares to whom it was necessary to discourse sweet music in order to tame them sufficiently to be milked, and the horses of the Sybarites, who have been taught to dance to certain strains of music, inopportunely heard the same strains of music on their way to battle and very much chagrined their masters by stopping to dance instead of going forward to fight, such was the influence of the familiar tune. De Vere gives an account of a certain Lord Holland who was very eccentric, and used during the time of William III to give his horses weekly concerts in a covered gallery specially erected for the purpose. He maintained that it cheered their hearts and improved their temper, and an eye witness says that they seemed to be greatly delighted with the performance. Not at

all a bad suggestion for owners of those horses who do not "come up to time" at the present day. A few years ago, according to the "American Naturalist," experiments were made in Lincoln Park, Chicago, to determine with scientific accuracy the effect of violin playing on different animals. It says:

"Music which was slow and sweet, like 'Home, Sweet Home,' or 'Annie Laurie,' pleased the panthers, a jaguar and a lioness and her cubs. The panthers became nervous and twitched their tails when a lively jig, 'The Irish Washerwoman,' was played to them, and relapsed into their former quiet when the music again became soothing.

"The jaguar was so nervous during the jig music that he jumped from a shelf to the floor of his cage and back again. When the player ceased playing and walked away the jaguar reached out his paw to him as far as he could. His claws were drawn back.

"The lioness and her cubs were interested from the first, though when the violinist approached the cage the mother gave him a hiss and the cubs hid behind her. At the playing of a lively jig the cubs stood up on their hind legs and peeped over at the player. When the musician retreated from the cage the animals came to the front of it and did not move back when he gradually drew so near as almost to touch the great paws that were thrust through the bars. When playing 'Home, Sweet Home,' the entire family seemed very attentive, and were motionless except that the cubs turned their heads from side to side. Then another jig was played and the cubs danced about.

"The coyotes, in a den, squatted in a semi-circle and sat silently while the music continued. When it ceased they ran up and pawed at the player through the bars. He began afresh, and they again formed in a silent semi-circle. This experiment was tried several times with the same results."

Many of us are familiar with the story of the man who was chased by wolves and who climbed to the rafters of an old cabin out of reach of the vicious fangs, but who fortunately carried with him an old violin, and through its means he was able to hold the wolves in thrall the night through by his music until the last string of the violin snapped and the brutes prepared to make an onslaught, but at that moment the first gleams of the coming day appeared and the wolves forsook their prey and disappeared.

Much has been written of the effect of music upon elephants and their tempers. Gentle strains have moved them to caresses, and martial music arouses them to a sort of fury. It has been written that the Arab, than whom there is no truer lover of the animal creation, entertains his camel with music, songs and fairy tales. When the animal lags in its long swinging trot, the Bedouin draws his reed-pipe from the folds of his turban and sharp and shrill its notes are heard far across the dusky sands, and the weary camel, encouraged by its notes, moves on again with enlivened motion.

It has often been noticed how quickly a cow will distinguish a new bell, and how great a disturbance is created in the whole herd, who will often take it upon themselves to chastise the unwary wearer. De Vere is an authority for the fact that the leader of a herd of cows when deprived of her beloved bell will weep bitter tears, and says that there are many instances of cows that have died when deprived of their harmonious ornament.

That mice have a musical ear and taste is a well known fact, but the lowest type of animal that is visibly affected by a strain of music is the turtle. Readers of that sensational tale, "The Household of Bouverie," will remember the history of the small tortoise "Merodach" whom his master could summon at will by playing a certain air on an old lyre, a tale that was said to be founded on fact.

ALBERTA A. FIELD.

DOMESTIC CATTLE.

In the beautiful Swiss Alps, in the early springtime, one hears the ringing of a large bell. This is rung in the villages and is the signal for the departure of the herds to the alps above. The cows, lowing and jumping with delight, collect eager for departure. The finest cow of all has the largest bell hung from her neck with a bright ribbon, and between her horns is placed a large nosegay of flowers.

She is the leader and has the place of honor, and to deprive her of this pleasure would be cruelty indeed. The herdsmen begin their songs, the yodling sounds through the valley, the milk stools are set between the horns of the cattle, the cheese kettles and provisions are packed upon the beasts of burden, and the procession gaily wends its way up the mountainside.

Even if poorly protected from storms which may be encountered above, we cannot wonder that the cattle thoroughly enjoy this calm, beautiful life in the alps, and we are told that cows left in the valley below will often escape and follow their companions to the distant mountains.

In the United States there are also cattle that live an outdoor life, which have the freedom of the range, and are shelterless the year around. These are the half-wild herds which roam over Texas, Colorado and other western states. Although the great cattle owners often inclose immense pastures, thousands of acres in extent, so that the herds are in a measure restricted, the smaller owners turn their cattle out and allow them to wander at will.

This occasions the necessity for the yearly "round-up." At a given time the cattle of each county are driven to a common center, confined within an inclosure or "corral," and the calves running with the cow mother are branded with the mark of the owners. The "round-up" is the great event of the cowboy's life, and an interesting occasion it certainly is. The time of the "round-up" may consume a number of days. The cowboys take their places on the outer limit of the tract belonging to their division, and with a skill acquired by long experience they are able to find every cow and calf and slowly to draw the circle smaller and smaller, until all the cattle are congregated in one herd. Then follows a time of work by day and merrymaking by night. The camp is maintained until all the cattle are branded with the brands which are registered with the county clerk, thus making the ownership plain to all. The cowboys, with their broad hats frequently ornamented with the various brands of the cattle owners, with their picturesque attire, mounted on their bronchos, or scraggy, wiry mountain ponies, are interesting individually and collectively. Among them at the time of the "round-up" are often men of education and refinement, as well as others who know no life besides that of the plains and the open. They ride like the wind, and when one rode to his ranch neighbor's thirteen miles away to execute a little commission before breakfast and returned before the coffee was spoiled, my eastern ideas received a shock which made it necessary for me to readjust my conception of western life and living.

Mr. Brehm tells us that the manner of life of the domestic cattle of various countries is instructive as well as fascinating. He tells us that there are "herds which lead the same manner of existence as did those belonging to the patriarchs. The wandering tribes of Eastern Soudan are herdsmen, who attend to their duties in exactly the same way as their ancestors did thousands of years ago. Herds of cattle constitute their only riches. Their wealth is estimated by the number of their

sheep and cattle, as that of the Laplander is estimated by the number of his reindeer.

The greatest of European landowners and cattle breeders, including those of Holland and Switzerland, can hardly realize the vast numbers contained in the herds of those nomads. Near the village of Melbess the plain shows a deep depression, at the bottom of which a number of wells have been dug, one beside the other, for the sole purpose of watering the herds congregating there during the noon hours. Beginning in the afternoon and during the whole night, far on toward noon next day, nearly a hundred people are busy hauling water from the wells and pouring it into pools, to which a little salty earth is added. From all sides innumerable herds of sheep, goats and cattle draw near, first the sheep and goats, then the cows. In a few minutes the valley is filled with them. One sees nothing but an unbroken herd of animals passing back and forth, a dark human form looming up between them at intervals. Thousands of sheep and goats keep arriving, while as many are departing satisfied. I believe it impossible to count the number of cattle, yet I do not exaggerate if I put down the number of the animals daily congregating at the spot as sixty thousand.

In the south of Africa the oxen are of great importance, as without them the extended trip necessary for purposes of trading and hunting through the vast wastes in parts entirely devoid of water and grass would be impossible.

In Southern Russia, Tartary and probably also a great portion of Central Asia considerable herds of cattle are kept." In fact, at the present time there seems to be no country in the world where domestic cattle are not found. They are common from Norway and Lapland in the north to Southern Africa and South America in the south. Columbus first brought them to the New World, and the Spaniards transported them to South America, where they multiplied with great rapidity.

In a general way domestic cattle may be divided into two classes—the straight backed cattle of Europe and the New World and the humped cattle of India. Humped cattle may also be found in China, Africa and Madagascar. They not only vary from other cattle by having the hump on the withers, but they have a different coloration, voice and habits. They have a convex forehead, long, drooping ears and a dew-lap, which hangs in folds the entire length of the neck. They vary much in size, as the largest "may stand as high as a buffalo, while the smallest may be little larger than a calf a month old." They are gentle in disposition and the larger ones are used for drawing native carriages. Unlike the European cattle, they seldom seek the shade, and never stand knee-deep in water. These cattle are often called zebus, and in the northern provinces of India, where they are used for riding, they will carry "a man at the rate of six miles an hour for fifteen hours."

"White bulls are held peculiarly sacred by the Hindus, and when they have been dedicated to Siva by the branding of his image upon them, they are thenceforth relieved from all labor. They go without molestation wherever they choose, and may be seen about eastern bazars helping themselves to whatever dainties they prefer from the stalls of the faithful."

In Central Africa the humped cattle are represented by the Galla, or Sanga. This is regarded by some as the finest breed of the humped variety. It is large, slender and vigorous, long legged and rather long tailed. The general color is a chestnut-brown. The horns are very strong and are fully forty inches in length.

The straight backed cattle are those of Europe, America, Australia and the smaller islands, and of some parts of Africa. They may be long-horned, short-horned or hornless. Among them are very many breeds, many well known being common almost everywhere.

One is the ox of Freiburg, or the Swiss ox. This variety yields both excellent beef and extremely rich milk.

The Dutch ox is marked by stately proportions, uniform coloring, a long, tapering head and a long and thin neck. The color is pied, a white or grayish ground showing red, brown or black spots of varying size and shape. "It has been bred in Holland fo centuries. It is

easily fattened and has an abundant yield of milk."

The Durham or short-horned breed of England is an animal with little symmetry of proportion, with a small head, a straight back and short legs. It is not a good milker, but surpasses all in the production of beef.

The beautiful Jersey cow is a great favorite in America and Great Britain on account of the rich cream and butter obtained from the milk. The Alderneys and Guernseys are classed with the Jerseys and are also of "elegant appearance." Other breeds are the hornless Galloways, the Devons, the Herefords, the Holsteins and many others.

Like the sheep, the cat and other domestic animals, the origin of domestic cattle seems surrounded with mystery and uncertainty. We know that in earliest times domestic cattle were common, as the earliest writings mention them and the ancient monuments picture them. It is, however, probable that all the straight backed varieties, directly or indirectly, may be traced back to the aurochs, or urus, a most interesting wild ox of Europe. This is extinct now, as well as some other species which may form the connecting link.

The aurochs was an animal of great size, nearly as large as an elephant, but with the form and color of a bull. Skulls and bones, both in England and on the Continent, show their characteristics, and skulls pierced by flint hatchets show that they were hunted by prehistoric hunters. We do not know when they finally disappeared, but in Julius Cæsar's time they seem to have been common in the Black Forest of Germany. Old chronicles prove that they were found in the middle of the sixth century, and in the ninth century Charlemagne hunted the aurochs in the forests near Aix-la-Chapelle. The Nibelungen-Lied mentions the slaughter of four in the twelfth century. In classic literature there are accounts of contests with gigantic wild oxen, indicating that the animal's range extended as far south as Greece. Bones have been found in a number of European countries, and it is certain that it roamed over Russia, but how far to the eastward and northward it wandered we cannot tell.

There still exist in England wild cattle known as the "park oxen." Though much smaller in size, they seem to be more like a direct descendant of the aurochs than any other species, although probably they descended from domesticated early breeds. These herds are confined in private parks, and the best known at the present time is the Chillingham herd. This park was probably inclosed about the thirteenth century. The cattle are small, with moderately rough, curly hair. The insides of the ears and muzzles are red, while the animals are white. They have the characteristics of animals in a wild state. "They hide their young, feed in the night, basking or sleeping during the day. They are fierce when pressed, but generally speaking are very timorous, moving off on the appearance of anyone, even at a great distance."

JOHN AINSLIE.

Mightiest of all the beasts of chase
That roam in woody Caledon,
Crashing the forest in his race,
The mountain bull comes thundering on.

Sir Walter Scott.

THE ARROW HEAD.

(*Sagittaria latifolia.*)

In all places then, and in all seasons,
Flowers expand their light and soul-like wings,
Teaching us, by most persuasive reasons,
How akin they are to human things.
—Henry Wadsworth Longfellow.

The Arrow Head is one of our most familiar plants, quite as well known because of its beautiful arrow-shaped leaves as for its showy white flowers. It is interesting and conspicuous among the rushes and sedges that abound in the sluggish waters that border lakes and streams. It must have sunshine and well illustrates the words of Thoreau: "Rivers and lakes are the great protectors of plants against the aggressions of the forest, by their annual rise and fall, keeping open a narrow strip where these more delicate plants have light and space in which to grow."

There are about twenty-five species of the genus Sagittaria, to which the plant of our illustration belongs. These inhabit both temperate and tropical regions. The generic name is from the Latin word sagitta, meaning an arrow, and referring, as does the common name, to the shape of the leaf. When the Arrow Head grows in water leaves are produced under water that do not have the arrow shape. These are not produced on those plants that grow on wet, muddy banks.

Two kinds of flowers are produced by this plant—the male and the female. The male flowers are the large white ones with a golden center formed by the group of yellow stamens. The female flowers are lower on the flower stalk and are dull green and unattractive. This arrangement of the flowers is nature's provision for preventing self-fertilization. The insects that visit these flowers naturally first alight on the more brilliant staminate flowers, and the pollen, adhering to their bodies, is later transferred to the seed producing flowers when the insects visit them. Though the two flowers are usually upon the same plant, they are sometimes developed on distinct plants. The Arrow Head beautifies the swampy regions of North America from Mexico northward.

THE BLACK COHOSH.

(*Cimicifuga racemosa.*)

The Black Cohosh, or Black Snakeroot, grows in rich woods from Canada nearly to the Gulf of Mexico. It is a conspicuous plant, with its long stem, which sometimes grows to a height of eight feet, and its large compound leaves, as well as with its long raceme of numerous small white flowers. This raceme during the ripening of the fruit often acquires a length of two to three feet.

This plant is sometimes called Bugbane. The name Cimicifuga is from the Latin words cimex, a bug, and fugo, to drive away. Both the technical name and the name Bugbane allude to the offensive odor of the flowers, which was supposed to drive away insects. In fact, the Black Cohosh is held in high repute by some Indians as a cure for the bite of poisonous snakes, as well as a powerful aid in driving away insects. Were it not for the strong, disagreeable odor of the flowers, which are only frequented by those flies which enjoy the odor of carrion, with its "tall white rockets shooting upward from a mass of large, handsome leaves,"

BLACK COHOSH.
(Cimicifuga racemosa.)

ARROW HEAD.
(Sagittaria latifolia.)

FROM "NATURE'S GARDEN"
COPYRIGHT 1900, BY
DOUBLEDAY, PAGE & COMPANY.

it would be a striking ornament for the flower garden.

Someone has said that the Black Cohosh "may truly be classed among those objects which, from the standpoint of frail humanity, distance lends enchantment." Though this be true, may we not say with Wordsworth,

To me the meanest flower that blows can give
Thoughts that do often lie too deep for tears.

THE VEERIE.

Darkness descends in shadowy folds
Over the distant hills; the breeze
Shivers and stirs in the leafy trees,
And a single star beholds.

The brook murmurs low in the tangled copse,
The jewel-weed stands with its feet in the stream,
By my lantern light the dew-drops gleam
On the leaves like diamond drops.

And lo! like the shuddering wind-stirred leaves,
Like the trembling weed where the waters glide,
A voice from the depths where the wood-birds hide
Its thrilling melody weaves.

What shakes the harp-strings in thy throat?
Is it joy or woe? Is it love or fear?
The mystery of the woods I hear
In the passion of your note.

Do you cry, Woe! Woe! Do you cry, Rejoice!
Joy and sorrow no longer twain,
Hope and despair in one wild strain,
And the night has found a voice.

—Isabella T. M. Blake.

THE SPRING MIGRATION.

II. IN CENTRAL MISSISSIPPI.

In the former article under this title attention was paid to the warblers only. In the present one I will try to give you some idea of the other birds that in spring take part in this general movement northward. A few birds that cannot properly be classed among the winter residents visit us now and then on warm summery days in January and February; they may be called the advance guard of the great army of migration. Conspicuous among these are the bluebird and the hermit thrush, two birds closely related, but very different both in coloring and disposition.

The bluebird is one of the first birds to be learned by the country children; his bright colors, cheerful music and affectionate, trusting disposition make him a general favorite. Right here permit me to digress enough to say that too little encouragement is given the children of our public schools, especially in the country, to learn the names and habits of our common birds. A little time and effort judiciously expended by the teacher in guiding the pupils to an understanding and love of the bird life about them would be an investment paying large dividends in quickened perceptions and increased interest in the too often dull and distasteful round of school work.

The hermit thrush is a lover of the deep, dark shades where he can sit on a twig and watch the stirring life about him without being a part of it—a kind of chimney corner philosopher, if you please. The rufous tail in sharp contrast to the olive brown head and back will tell you his name every time, for he is the only member of the thrush family found in these regions in which the color of the tail differs materially from that of the back. I remember one afternoon in February seeing one in the shade of a thick-topped holly; here he remained quite unconscious while we peered at him through the opera glass, discussed his coloring and consulted the pocket manual to see what Chapman said about him, an occasional jerk of the tail or a slight movement of the head being the only indication of life in the graceful figure before us.

Late in March or early in April come the purple martin, the bank swallow and chimney swift, all cheerful birds whose only apparent aim in life is to sail about through the air in pursuit of gnats and flies. The noisy chatter of the martins as they wheel and turn about near the house is one of the most agreeable sounds in all the gamut of bird voices. They are very numerous in parts of Mississippi, but the only place in the North where I have ever seen them in any considerable numbers is on the Maumee, not far from the little town of Waterville, Ohio. The bank swallow and chimney swift are smaller and less conspicuous than the martin, less noisy but quite as useful.

Soon after the swallows appear the flycatchers, the tyrant wood pewee, phœbe bird, Acadian and great crested. What figure is more familiar on hot summer days than the kingbird or tyrant flycatcher perched on a mullein stalk, now and then darting down from his perch to capture some straying gnat? The Acadian stops for only a very short stay; you will find him in the deepest shades, where the gloom and dampness suit his somber fancy. The wood pewee is also a gloomy soul, possessing no gift of color or song to attract the eye or hold the fancy; his long drawn out, monotonous note always reminds me of hot August afternoons when all other

bird voices are silent as the grave and summer reigns with undisputed sway. The prince of woodland flycatchers, both from point of coloring and attractive personality, is the great crested; his olive brown back, whitish breast and sulphur-yellow belly give him a more brilliant appearance than the others just mentioned. His character, too, is better, for he is neither as belligerent as the kingbird or as gloomy as the Acadian and wood pewee. His call is not unmelodious, though it would be misleading to call it a song.

April brings the orioles to play their not insignificant part in the great color scheme of Nature at this resurrection season. I always associate the coming of the orchard oriole with the opening of the Chickasaw roses, and the arrival of the Baltimore with the blooming of the yellow poplar (Liriodendron tulipifera). For several seasons I caught my first glimpse of the Baltimore's flame and black in the top of a tall poplar, and heard his cheery whistle as he dodged in and out among the great cups, making a breakfast on the insects whose hum made the whole woods drowsy. A few brief days of rest and pleasure in this land of flowers and the orioles are gone, except a few pairs that stay to rear their families in these solitudes.

A long, slim, brown body, a stealthy way of sliding in and out among the vines and limbs, and a shy, suspicious air mark the black billed cuckoo or raincrow. He, too, stays but a few days. When you see the raincrow it is time to look for the Wilson's thrush; but it was never my privilege to hear him sing in these forests. Perhaps he is tired out with the long journey from the land of eternal summer and wishes to be seen, not heard. Writers tell us that this thrush is very plentiful in certain localities, but in this section of the South I saw only two specimens in four years.

The musician of the thrush family, of the whole woods for that matter, in some points a successful rival of the mocking bird, is the wood thrush. Dark cinnamon brown, of quite a uniform tint above and white breast spotted with round, black, or dark brown enable one to pick him out easily from the rest of the thrush family. I remember hearing one sing at a negro "baptizing" just at sunset of an April day. After the immersion had taken place, as the officiating "elder" led the candidate to the bank of the pond, clear negro voices raised one of the good old hymns. As the words of the last verse died away on the evening air and the elder raised his hand to pronounce the benediction, a wood thrush in the nearby forest began his vespers. Sweet, clear as a silver bell, the notes arose, tinkling, reverberating, tender but dignified, voicing in a half-unconscious way the solemn emotions of the hour. What is there in the singing of even the best of trained choirs to compare with this simple voice of Nature, without affectation or conceit, arousing the feelings and appealing to the noblest instincts of our common nature.

Birds crowd in upon us, bull bat, chuck-wills-widow, turtle dove, gray-cheeked thrush and titlark come to see us, some to stop and add their own individual element to the local coloring, others after a few hours of rest to continue their way northward. Multitudes of sparrows, jays, thrashers, nuthatches, titmice, woodpeckers, etc., that have enjoyed our hospitality during the winter and part of the spring pack up their effects and leave, for summer is almost here.

The bird that to my mind is distinctly the advance agent of summer has well been called the summer tanager. He delays his coming until straw hats and linen suits appear; then what a dash of warm color he brings. Seated on the topmost bough of a tall oak, where the sun's rays fall full upon him, he gives such intense, palpitating color that one's eyes are almost blinded looking at him. Rich as is the red of the cardinal it appears soiled and tarnished beside the summer tanager.

With a sigh we realize that the spring migration is over for this year; but there is one consolation, only a part of its music is hushed—the soul of Southern bird life, the mocking bird, is left. Inconspicuous by reason of his Quaker-gray suit, he makes up in attractive manners and variety of musical gifts what he lacks in other respects. It is quite impossible to do justice to this bird either in describing his bubbling, effervescent life

during the nesting season or in giving an adequate idea of the effect produced upon the senses by his exquisitely beautiful nocturnes. One March night some noise just outside my window awakened me. I arose and raising the window listened. The full moon, almost in the zenith, was flooding the landscape with a weird, soft light; the shadows of the cedar hedge a few yards away lay black as ink; the very air was heavy with the perfume of the jessamine abloom in a neighboring forest. In the cedars a mocking bird sang to himself a sweet, dreamy song, giving more complete expression to the mystery, the romance, the passion, the rapturous content of a Southern moonlit night than any poem that poet's hand has ever written.

James Stephen Compton.

ANTICS OF A HUMMINGBIRD.

As the writer was standing one May morning near a clump of bushes in the suburbs of a city in Maine he witnessed, for the first time in a long experience of bird study, the courting antics of a male hummingbird. Two of the tiny creatures appeared, apparently evolved from mid-air, and one alighted in the bush. She was the female. The male immediately began to disport himself in the air in the following remarkable manner:

He dashed back and forth over the head of the female in long, curving swoops such as one describes in a swing, all the time giving utterance to a low, pleasing twitter. He thus swept back and forth ten times, rising at the ends of the curve to a height of perhaps fifteen feet, sustaining himself there a moment, with his ruby throat flashing in the sun, and then darting down the double toboggan slide and up to the other end. Though he flew very swiftly, yet his speed was not the usual flash and his movements could be plainly seen. I had never before seen a hummingbird fly so slowly nor heard from one of them such a prolonged vocal sound. Indeed, it is very rare that one hears the hummingbird's voice, even if one is on the alert for it. After the tenth swoop there was a buzz of wings and both birds had vanished. A minute after I found the male in a cherry tree sipping honey from the blossoms.

There is evidently a rivalry between the bees and the hummingbirds in their quest for honey. This bird, with an angry dash, expressed its disapproval of the presence of a big bumblebee in the same tree. The usually pugnacious bee incontinently fled, but he did not leave the tree. He dashed back and forth among the branches and white blossoms, the hummingbird in close pursuit. Where will you find another pair that could dodge and turn and dart equal to these? They were like flashes of light, yet the pursuer followed in the track of the pursued, turning when the bee turned. There was no cutting across, for there was no time for that. In short, the bird and the bee controlled the movement of their bodies more quickly and more accurately than the writer could control the movement of his eyes. The chase was all over in half the time that it has taken to tell it, but the excitement of a pack of hounds after a fox is as nothing in comparison. The bee escaped, the bird giving up the chase and alighting on a twig. It couldn't have been chasing the bee for food, and there is no possible explanation of its unprovoked attack except that it wished to have all the honey itself. So even as little a body as a hummingbird can show selfishness in a marked degree. However, Mr. Bee continued to take his share of Nature's bounty, though doubtless he had his weather eye open against another attack. Both scenes afforded me a delightful study and were a rare privilege.

George Bancroft Griffith.

FROM KŒHLER'S MEDICINAL-PFLANZEN.

488

SWEET FLAG.
(Acorus calamus.)

CHICAGO:
A. W. MUMFORD, PUBLISHER.

CALAMUS.

(*Acorus calamus* L.)

Another goblet! quick! and stir
Pomegranate juice and drops of myrrh
And calamus therein.

—Longfellow: Golden Legend, III.

Acorus calamus, commonly known as Calamus, sweet flag and cinnamon sedge, is a reed-like plant common in Europe and Northern United States. It grows in swamps, marshes and very moist places. It is a herbaceous perennial growing from spreading fleshy rhizomes. The long, sword-like, deep green, pointed leaves grow up from the rhizomes.

The history of this plant dates back to remote antiquity, yet there is considerable uncertainty as regards the identity of the various plants which have at various periods been supposed to be sweet flag. There is no doubt that some reed-like plant in many respects similar if not identical with calamus was used by the ancient Egyptians in the preparation of incense as recorded in the papyri of Ebers. These Egyptian records date back to the eighteenth dynasty, or from 1800 to 2000 years B. C. Vague references to a similar plant are to be found in the ancient sacred writings of the Hindoos. It is likely that the plant referred to and that which is mentioned in the Bible is a species of Andropogon, and not Acorus. In Exodus, 30:23, we find: "Take thou also unto thee principal spices of pure myrrh, of sweet cinnamon, and of sweet Calamus."

Our first reliable information of Calamus is from Plinius, who received specimens from the country about the Black Sea and who described it under the name of Acorus calamus. Acorus, derived from the Greek a for, and corus, the eye, because the plant was highly recommended in the treatment of diseases of the eye. Calamus, also derived from the Greek, means a reed or reed-like plant. Dioscorides and Theophrastus also describe the plant with special reference to the rhizome and its uses.

The rhizomes should be collected late in the autumn, carefully cleaned of dirt, leaf remnants, leaf scales and roots and dried in the sun or in an oven at a moderate temperature. The aromatic odor increases greatly on drying.

Calamus has ever been a favorite popular remedy. Its principal use seems to have been that of a tonic and blood purifier, for which purpose bits of the dried rhizomes are masticated and the saliva swallowed. It undoubtedly is a tonic and it also has a beneficial, stimulating and antiseptic effect upon gums and teeth. Chewing the rhizomes is also said to clear the voice. Calamus is, or has been, used in flavoring beer and gin. Country people add it to whisky, wine and brandy to make a tonic bitters for the weak and dyspeptic. It is said that the Turks employ it as a preventive against contagious diseases. In India it is used to destroy vermin, especially fleas. In England it is employed in the treatment of malaria.

At the present time Calamus is no longer extensively employed in medicine. It is considered as stimulating, aromatic and bitter tonic. It is perhaps true that its value as a tonic is at present somewhat underestimated by the medical profession. It is also serviceable in flatulent colic, and in what is designated as atonic dyspepsia. It is added to other medicines, either as a corrective, or adjuvant.

Description of plate: *A*, rhizome and basal portion of leaves; *B*, upper end of leaf with inflorescence (spike); 1, 2, 3, 5, flowers; 4, stigma; 6, section of fruit; 7, stamens; 8, pollen grains.

ALBERT SCHNEIDER.

THE BIRDS.

They are swaying in the marshes,
  They are swinging in the glen,
Where the cat-tails air their brushes
  In the zephyrs of the fen;
In the swamp's deserted tangle,
  Where the reed-grass whets its scythes;
In the dismal, creepy quagmire,
  Where the snake-gourd twists and writhes.

They are singing in arroyos,
  Where the cactus mails its breast,
Where the Spanish bayonet glistens
  On the steep bank's rocky crest;
In the cañon, where the cascade
  Sets its pearls in maiden-hair,
Where the hay and holly beckon
  Valley sun and mountain air.

They are nesting in the elbow
  Of the scrub-oak's knotty arm,
In the gray mesh of the sage-brush,
  In the wheat-fields of the farm;
In the banks along the sea beach,
  In the vine above my door,
In the outstretched clumsy fingers
  Of the mottled sycamore.

While the church-bell rings its discourse
  They are sitting on the spires;
Song and anthem, psalm and carol
  Quaver as from mystic lyres.
Everywhere they flirt and flutter,
  Mate and nest in shrub and tree.
Charmed, I wander yon and hither,
  While their beauties ravish me,

Till my musings sing like thrushes,
  And my heart is like a nest,
Softly lined with tender fancies
  Plucked from Nature's mother-breast.

—Elizabeth Grinnell, in "Birds of Song and Story."

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. XI. MAY, 1902. NO. 5.

"HARK, HARK, THE LARK!"

A little lyric, as clear as water,
Sweeter voiced than the river daughter,
Or Dryope's moan,
Rang from the heart of the truest singer,
And straight the sound was the magic bringer
Of joys unknown.

For night had fallen and day had risen,
And, breaking through his eastern prison,
The glad sun shone;
And all was fragrant and sweet with morning,
And to the sky, the sad earth scorning,
The lark had flown.

And, faintly heard from the coast of heaven,
The song of the glad strong seraphs seven
Was earthward blown,
And echoed, with a strange completeness,
(As a small bloom treasures infinite sweetness),
In the lyric's tone.

And the marvelous freedom of the dawning
Breathed large through the gates of life,
Wide yawning,
Far open thrown;
And the trembling thrill of incarnation
Awoke the earth to the new creation
Of Beauty's own.

—Edward O. Jackson.

171325

THE LITTLE GREEN HERON.

(*Ardea virescens.*)

Oh, give me back my thicket by the marsh!
Let me see the herons wade
In the watery glade,
And let me see the water-fowl go by
Glimmering against the sky.

—Maurice Thompson, "In Captivity."

The Ardeidae, or the family of herons, egrets and bitterns, includes about seventy-five species, which are world wide in their distribution, though much more common in temperate regions. So widely scattered are the species of this family, whose Latin name means heron, that most persons who are deeply interested in the study of bird life are more or less familiar with their habits. The large size of the herons, together with their long bills, necks and legs, renders them conspicuous and demands more than a passing glance from even the casual observer. Many bodies of water in retired locations will harbor at the proper season one or more species of this interesting family.

One of the smallest of the herons, and one of the most common in many localities, is the Little Green Heron, familiarly known to the rural Hoosier boy as the "Schytepoke," and to others as the "Poke." It is not the purpose to give a description of this bird; those of our readers—if there be any—who are not familiar with it will find minute descriptions of it in all the standard manuals. However, a few observations on its nesting and feeding habits may be of some value and interest.

In central Indiana the Little Green Heron arrives from its winter residence in Florida, or farther southward, about the last of April, and immediately begins nesting, selecting, if convenient, second growth timber, especially if there be a thicket of undergrowth. But if these conditions be not at hand, it seems to prefer, as a site for its nest, an old abandoned orchard, or at least one somewhat remote from human habitation, but not very far distant from a stream or pond. In the fork of some tree ten to twenty feet above ground is collected a considerable sized but irregular and loose bundle of rough sticks. In this by the middle of May, or at times even earlier, it lays from three to six greenish blue eggs, about an inch and a half long by an inch and a quarter in diameter. The period of incubation cannot be long, as some years young almost ready to fly can be found before the last of May. We have never found more than one nest in the same immediate vicinity, but, according to Ridgway, it sometimes nests in colonies.

For the remainder of the summer this is a social bird, at least to the extent that the whole family remain together, wading the water, stalking along the banks or perching on trees, bushes and logs. At this time it displays some curiosity when a person comes warily into its haunts. Its long neck is stretched to its limit as the bird endeavors to keep an eye on the intruder, and at the slightest suspicious movement on the part of the latter, its long wings are raised in readiness for flight. Remain perfectly quiet, however, and it again resumes its occupation, apparently unconcerned; but let a sudden movement be made, and then it awkwardly but quickly flies away, uttering meanwhile a discordant squawk.

It is quite interesting to see one of these herons feeding. It will wade along the edge of a pond or stream, very slowly lifting its feet out of the water and carefully putting them down again. Its neck is folded so that it almost dis-

FROM COL. CHI. ACAD. SCIENCES.

489

GREEN HERON.
(Ardea virescens.)
About ½ Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO

appears, the head being drawn back against the shoulders. At last it sees an unwary minnow swimming lazily along. Slowly and carefully it leans its body forward and downward toward the water, the long legs looking and acting almost like stilts; still more slowly the head with its long, stout beak moves cautiously toward the water surface, very much like a young turkey seeks to capture a grasshopper. Then suddenly, as if a spring had been set free in its neck, the head is thrust downward until the beak, or more, disappears beneath the surface, but only to reappear immediately with the struggling minnow or sunfish between its mandibles.

The prey secured, the bird now walks to an open spot on the bank several feet away, if possible, from the water so that the fish cannot flop back into its native element. With a blow or two from the bird's bill the fish is stunned and in another moment has started head first down the heron's throat. As the latter stretches its neck, the descent of the fish is plainly to be seen until it reaches the body of the bird. If the heron is not yet satisfied with its meal, the same performance is repeated until at last it flies to some overhanging limb—usually a dead one—of a tree where it wipes its bill and finally flies away. By the last of August or first of September it has gone on its southern journey, and Indiana knows it no more till spring.

HENRY H. LANE.

THE HAND THAT STRUCK THEE DOWN.

The hand that struck thee down
  Could not have known
That thou hadst songs unsung
  And flights unflown.

But ours will be the loss—
  No more at morn
Will sound the reveillé
  From thy wee horn.

Thy form will not be one
  That flits the air,
As one that trusts in God
  And knows no care.

Then when the shadows creep,
  And light grows dim,
We'll list, but never hear,
  Thy vesper-hymn.

The hand that struck thee down
  Could not have known
That thou hadst songs unsung
  And flights unflown.

—J. D. LaBarre Van Schoonhoven.

THE GOBBLER WHO WAS LONESOME.

A HISTORICAL FACT.

Turkeys are social creatures and, like some boys and girls, do not like to be left for any length of time to find their food or their pleasures alone.

Big Tom was a mammoth gobbler of the bronze family, which stands high in Turkeydom. Big Tom loved to have a group of admiring mates and social equals about when he spread his jaw and sang his song. Some taller bipeds who spoke a different language said that his song of "gobble-obble-obble" was not pleasing. This remark may have been the reason why Big Tom's wattles grew so scarlet each time he sang, but it is to be doubted.

When the spring days had grown long three hen turkeys came off their nests with broods of turkey chicks, too valuable to the farmer to be left entirely to the turkey mother's judgment and care. Hence these various broods, numbering in all twenty-seven chicks, were penned into tiny homes and fed on food furnished by their master.

Big Tom watched these proceedings for about one week, and then evidently rebelled at the taking of his kingdom away from him.

He first persuaded one brood to follow him into a field where grasshoppers bounded and abounded. This brood he kept over night housed under his great wings. His success pleased him, for in a few days a second brood was discovered to be missing, and two hen turkeys were idling away their time talking over their troubles or happiness through the bars of their wooden prisons.

But the climax was reached when in a distant field a few days later Big Tom was found chaperoning a party of twenty-seven young tourist turkeys of a very tender age, through a field where insect food was too plentiful for the farmer's profit, but just right for sturdy bronze turkeys, both young and old.

The farmer attempted to drive his majesty, Big Tom, back to his quarters near the barn, but the young turks disappeared at their father's first warning cluck or signal, and Big Tom showed plainly that he resented interference with his own plans for his children's future.

The farmer returned to the house alone and finding the three turkey hens calmly gossiping through the slatted fronts of their coops, gave them their liberty, and went back to planting his crop in the distant field, where he found Big Tom happy with his party of young adventurers.

Big Tom never allowed one turkey chick to return night or day to its coop or its mother. In the fall, the farmer and his boys counted twenty-seven well grown turkeys perched on the fence back of the barn, with his majesty, their father, half way down the line, where his eyes could take in all their doings.

The hen turkeys had gone about their own work, raised other broods and brought them up in coops with various losses, but Big Tom of the red wattles has always been celebrated in that locality from that year down to the present date as the best manager of a turkey ranch ever known.

At Thanksgiving time Big Tom's good qualities were enumerated by a large party gathered at the farmer's table, and if his majesty could have heard the flattering remarks his pride would have perhaps caused him to give back an answering "gobble-obble-obble."

MARY CATHERINE JUDD.

FROM COL. CHI. ACAD. SCIENCES.

VARIED THRUSH.
(Hesperocichla naevia.)
About ½ Life-size.

COPYRIGHT 1903, BY A. W. MUMFORD, CHICAGO.

THE VARIED THRUSH.

(*Hesperocichla naevia.*)

The Varied Thrush is one of the most beautiful members of the family of thrushes. Its range is somewhat limited as it frequents only the coastal regions of the northwestern part of North America. In winter, however, it may be found in California and is occasionally seen as far south as Lower California. As a straggler, it is sometimes noticed in the New England states.

Mr. Mitchell says that the Varied Thrush reaches the Columbia river in its southward flight some time in October. He also states that "at this time they flit through the forests in small flocks, usually frequenting the low trees, on which they perch in perfect silence and are at times very timorous and difficult to approach, having all the sly sagacity of the robin." In fact this bird, which is often called the Western Robin, is not only much more shy and retiring than our well known eastern friend, but their song is also very different, "consisting only of five or six notes in a minor key and a scale regularly descending." Mr. Townsend speaks of the song as being louder, sharper and quicker than that of the robin and adds that its song just before its northward flight, in the spring, is pleasant. Its song is seldom heard except from the tree tops, and in summer, as a rule, only from the deeper forests.

Dr. Suckley describes the Varied Thrush as he studied it in Oregon and Washington. He says: "In winter it is a shy bird, not generally becoming noticeable in the open districts until after a fall of snow, when many individuals may be seen along the sand beaches near salt water. They are at such times tame and abundant. I suppose that they are driven out of the woods during the heavy snows by hunger. It may then frequently be found in company with the robin, with which it has many similar habits. At this time of the year it is a very silent bird, quite tame and will allow near approach. It appears to be fond of flying by short stages in a desultory manner, sometimes alighting on the ground, at other times on fences, bushes or trees."

Mr. Cooper, speaking of the bird as he found it near San Francisco, says that they begin to appear in October, when "they are usually timid, but toward spring come more familiarly around houses and utter their shrill, low notes, which seem much more distant than the bird itself really is. If pursued they hide, and sit unmovable among the foliage."

The bird is also known by several other names, such as the Spotted, Golden, Painted or Columbia Robin or Thrush, and sometimes it is called the Thrush-like Mockingbird. A marked characteristic of the male is the black crescent on the breast.

Mr. Davie describes the nest as found by Dr. Minor in Alaska: "Its base and periphery are composed of an elaborate basket-work of slender twigs. Within these is an inner nest consisting of an interweaving of fine dry grasses and long gray lichen." The eggs are said to be a light greenish-blue, slightly sprinkled with spots of a dark umber-brown.

MISSOURI SKYLARK.

(*Anthus spragueii.*)

"What thou art we know not;
What is most like thee?
From rainbow clouds there flow not
Drops so bright to see,
As from thy presence showers a rain of melody."

—Shelley.

When the umber skylark is struck into glory of plume and of song by the rising sun, we can conceive that the song is indeed "the nearest approach, in animal nature, to the ringing of the hydrogen bells in the physics of light," and that when "the music soars within the little lark and the lark soars," he is almost an involuntary agent, the song, like the summer, owing its creation, as George MacDonald tells, to

"The sun that rises early,
Shining, shining all day rarely;
Drawing up the larks to meet him,
Earth's bird-angels, wild to greet him."

Although the skylark, more than any other of the aerial tribes, "holds the middle rank 'twixt heaven and earth, on the last verge of mortal being stand," the fate of the Missouri skylark is more unhappy than that of a prophet, for, being so little know in comparison with his deserts, he is almost without honor in his own country or any other. Yet it was so long ago as May 19, 1843, that Audubon, near the headwaters of the Missouri, celebrated in his journal the glad tidings of his discovery: "Harris and Bell have returned, and, to my delight and utter astonishment, have brought two new birds, one a lark, small and beautiful." And again, on June 22, he writes: "The little new lark, that I have named for Sprague, has almost all the habits of the skylark of Europe. Whilst looking anxiously for it on the ground, where we supposed it to be singing, we discovered it to be high over our heads, and that sometimes it went too high for us to see at all. When this species start from the ground they fly in succession of undulations, which renders aim at them quite difficult. After this, and in the same manner, they elevate themselves to some considerable height, as if about to sing, and presently pitch toward the ground, where they run prettily, and at times stand still and quite erect for a few minutes."

On June 24 he continues: "This afternoon I thought would be a fair opportunity to examine the manners of Sprague's lark on the wing. The male rises, by constant undulations, to a great height, say one hundred yards or more; and, whilst singing its sweetest sounding notes, beats its wings, poised in the air like a hawk, without rising at this time, after which, and after each burst of singing, it sails in divers directions, forming three-quarters of a circle or thereabouts, then rises again, and again sings. The intervals between the singing are longer than those the song occupies (the latter about fifteen to twenty minutes), and at times the bird remains so long in the air as to render it quite fatiguing to follow it with the eye. Sprague thought one he watched yesterday remained in the air about an hour. Bell and Harris watched one for more than half an hour, and this afternoon I gazed upon one, whilst Bell timed it, for thirty-six minutes."

In November, 1873, Dr. Coues discovered this pipit in considerable numbers, and continues Audubon's enthusiastic description: The ordinary straightforward flight of the bird is performed with a regular rising and falling like that of the titlark; but its course, when startled from the ground, is exceedingly rapid and wayward. At such times, after the first alarm, they are wont to hover around in a desultory manner for a considerable time and then pitch suddenly down to the ground, often near where they rose. Under these circumstances they have a lisping, querulous note. But these common traits have nothing to do with the wonderful soaring action and the inimitable, matchless song of the birds during the

breeding season. It is no wonder Audubon grew enthusiastic in describing it.

"Rising from the nest or from its grassy bed, this plain-looking little bird, clad in the simplest colors, and making but a speck in the boundless expanse, mounts straight up on tremulous wings, until lost to view in the blue ether, and then sends back to earth a song of gladness that seems to come from the sky itself, to cheer the weary, give hope to the disheartened, and turn the most indifferent, for the moment at least, from sordid thoughts. No other bird music heard in our land compares with the wonderful strains of this songster; there is something not of earth in the melody, coming from above, yet from no visible source. The notes are simply indescribable; but once heard they can never be forgotten. Their volume and penetration are truly wonderful. They are neither loud nor strong, yet the whole air seems filled with the tender strains and the delightful melody continues long unbroken. The song is only heard for a brief period in the summer, ceasing when the inspiration of the love season is over, and it is only uttered when the birds are soaring."

Baird, Brewer and Ridgway tell that Captain Blackiston found this skylark common on the prairies of the Saskatchewan, and described the song as consisting of a quick succession of notes, in a descending scale, each note being lower than the preceding. The bird then descends to the ground with great rapidity, almost like a stone, and somewhat in the manner of a hawk sweeping on its prey. He also saw these birds in nothern Minnesota.

Some one says that the larks, those creatures of "light and air and motion, whose nest is in the stubble and whose tryst is in the cloud," are well-known as the symbol of poets and victim of epicures, and Burroughs, to whom they are a symbol, says: "Its type is the grass where the bird makes its home, abounding, multitudinous, the notes nearly all alike and in the same key, but rapid, swarming, prodigal, showering down as thick and fast as drops of rain in a summer shower." This of the skylark of Europe. But he adds: "On the Great Plains of the West there is a bird whose song resembles the lark's quite closely, and it is said to be not at all inferior—the Missouri Skylark, an excelsior songster, which from far up in the transparent blue rains down its notes for many minutes together. It is no doubt destined to figure in the future poetical literature of the West."

Yet all that has been written of the "Star of music in a fiery cloud" by Burroughs and by Wadsworth, Shelley and the rest, might properly have been indited to the "Musical Cherub" of the Big Muddy Valley, when, climbing, "shrill with ecstacy, the trembling air," he "calls up the tuneful nations," and the same celestial pilgrim might have appeared to Eric MacKay:

"In the light of the day,
Like a soul on its way
To the gardens of God, it was loosed from the earth;
And the song that it sang was a pæan of mirth
For the raptures of birth."

JULIETTE A. OWEN.

THE MASTER'S PROTEST.

My song consists of all the notes
That flow from feathered songsters' throats;
My heart is thrilled with all their pain,
Their sorrow, love, and joy again.
They have but taken of my song
A measure, which they warble long.
So let my protest now be heard—
O call me not a Mocking-bird!

—Hildane Harrington.

THE SHORT-BILLED MARSH WREN.

(*Cistothorus stellaris.*)

Because of its shy and retiring disposition and its apparent dislike to take wing the Short-billed Marsh Wren is not very often seen. It is usually found closely associated with its first cousin, the long-billed marsh wren, from which it is distinguished by the markings on the back and its short bill.

It inhabits the reeds and tall grass of our marshes of the central states and ranges as far north as Massachusetts and Manitoba to as far west as Utah.

After spending the winter in the southern states it reaches this locality about the last of April or the first of May. The marshes which it inhabits prevent close observation. But the fact that nests have been found with eggs in as early as the last week of May indicates it arrives about the last of April.

The nest is a loose, globular affair situated in the top of a tussock of grass or in rushes some twelve or eighteen inches above the ground or water. It is composed of coarse grass closely interwoven with fine blades and fibers, making a compact structure. The inner part is lined with fine materials, such as soft down, cat-tail blossoms, etc. At one side, sometimes ingeniously hidden, is a small round entrance. The nest resembles very closely that of its first cousin in shape and location, but can easily be recognized by the eggs, which are pure white.

This little bird sometimes builds a number of nests, but lays eggs in but one. Whether it does this because it enjoys the occupation, or for the purpose of producing a "blind," no one can say. A number will nest in the same locality, thus forming quite a colony.

Its song is quite different from that of the long-billed. Mr. Gault says: "In the manner of delivery it forcibly reminds one of the song of the dickcissel, although, of course, it is not near as loud. They are quite shy, but would allow one to approach within forty or fifty feet of them, when they would dart down into the thick grass, from which it was almost impossible to dislodge them."

Mr. Washburn, in speaking of this bird in the Red River valley, gives some interesting accounts of its peculiarities. "In a large marsh * * * I found a colony of these wrens, which by my presence was thrown into most excitable activity. They are at a disadvantage when on the wing, these appendages seeming scarcely able to support their obese bodies, for they fly as though weighted like a bee returning to a hive heavily laden. Instinctively they fly toward the friendly support of some tall weed where, as if feeling more secure on their feet than in the air, they resume their antics, hanging their heads downward, twirting their tails, jumping from one weed to another, and each bird apparently communicating its restlessness to its neighbor, until the whole colony is in a state of ferment. They do not alight gracefully like most birds, but seem to tumble into the weeds."

Unless one is very cautious and persevering he is not able to observe the activity of these wee bits of bird life. He can wade into their very midst and can hear them chattering within a few feet of him without seeing them or at the best getting but a glimpse of one. But if he conceals himself and remains quiet for perhaps a half hour his efforts may be rewarded.

Ilk happy bird, wee helpless thing,
That in the weary months o' spring
Delight me to hear thee sing,
What's come o' thee?
Where wilt thou cower thy chittering wing
And close thy e'e?

—Burns.

J. Rollin Slonaker.

FROM COL. CHI. ACAD. SCIENCES.

491

SHORT-BILLED MARSH WREN.
(Cistothorus stellaris.)
Life-size.

COPYRIGHT 1902, BY A. W. MUMFORD, CHICAGO.

TWAIN LOVES OF JEREMIAH.

"Do not leave me, I beg of you," implored old Jeremiah, standing guard over the opening in the fence. "Believe me, there are dangers outside of which you know not. Snakes frequent the tangle of these weeds and swine lie in wait."

"Stay, if you are afraid. Stay, anyway," she answered, curtly, and vaulting over him, she went through the fence and called her ten children from the other side.

Jeremiah struck his white head in the dust, praying her to return. He lunged at the fence and fell back, baffled, his feet beating the air. He floundered upright and ran, entreating, along the fence, his head thrusting between the interstices. The obdurate fair one paid no heed. She was talking baby talk to her followers.

Jeremiah, after exhausting every maneuvre to get through, over or under the fence, resigned himself to the inevitable and began looking around for entertainment. He is a great gander to keep something going on. A trim black pullet passed the orbit of his vision and he sauntered up to her.

"Good evening, Miss Dominie. You are looking charming."

Miss Dominie tossed her head. "Perhaps," she cackled, "but I can only charm you in the absence of Mrs. Cochin."

"What do I care for Mrs. Cochin?" protested Jeremiah, and he looked Miss Dominie over with the eye of a connoisseur. She was certainly well bred and she carried herself erect. This was because she had been raised a pet, but Jeremiah ascribed it all to her aristocratic lineage and thought complacently that if any ill fate overtook Mrs. Cochin, Miss Dominie would be a close second in his affections. "Mrs. Cochin is too old," he added.

"And that is a good thing for you," retorted Miss Dominie. "She is too old to be particular and she may tolerate you. For myself, I draw the line at ganders. Chickens are good enough for me."

"You talk like a preacher," suavely answered Jeremiah, "and I agree with you. They are good enough for me, too," but Miss Dominie had darted around the big coop and was lost to view. At that moment Dollie came out of the house carrying a bucket of water and went from pan to trough, pouring the chickens a fresh drink. With cries of delight, Jeremiah fluttered in her rear, paddling and throwing the water, making it an undrinkable mixture for the chickens. Suddenly his eyes dilated, his neck straightened and stiffened, his wings slightly lifted and his large feet passed each other in rapid succession, fenceward. Dollie's father was coming from the barn, walking stiffly, his arm pressed against an aching back. His eye caught Jeremiah's and the pursuit began. The man forgot his lame back and plunged forward, gathering small stones which he aimed at Jeremiah. Round and round the fence they went, the man throwing stones and execrations; the gander gabbling, ducking, dodging until he bethought himself of the haven of gooseberry bushes, scrambled under them and into the orchard, through the hedge into the open where, joy inexpressible, Mrs. Cochin and her ten fluffs were tumbling in the dog fennel.

"At last I have found you, my beloved," gasped Jeremiah, and he rounded up the chicks and drove them into the orchard. Mrs. Cochin followed, protesting. She even flung herself at Jeremiah, with many a cluck and scratch; but Jeremiah had constituted himself head of her household and, serene in the consciousness of right, he took the family through the orchard, under the gooseberry bushes and back into the yard.

Jeremiah knew that a little of him went a long way with Mrs. Cochin, yet he never lost hope that his persistent devotion would win her favor. He had been a lone gander many years. There was not another feather of his kind in the

poultry yard. It was sometimes marveled that he did not take to the ducks, his next of kin, fat and wabbly, with raucous voices. It was so much easier to love Mrs. Cochin, the perfection of grace and beauty. She was large and stately. She wore always a buff robe that flashed in the sun like burnished gold. Poor Jeremiah fell easily a prey to her unconscious wiles and consecrated himself, body and soul, to her personal attendance and protection.

Jeremiah's first concern, again inside the yard, was to reconnoitre for his friend, the enemy. He was nowhere in sight and Jeremiah turned pleadingly to Mrs. Cochin. "Let us make up," he urged. "Your coldness is killing me. I honestly think I have not long to live."

"Diet yourself," suggested Mrs. Cochin, her feminine intuitions connecting cause and effect. "And don't be a goose."

Mrs. Cochin went scratching in a flower bed. Ignored, he followed at a respectful distance, hissing at the pup who ambled near, striking a cat whose lithe body was poised for a spring at one of the chickens, and frightening away a brood of ducklings. All afternoon the faithful sentinel executed his self-imposed duty, and finally followed his charmer across the yard to the old workshop.

"Do not go in there," he cried, sharply.

For answer Mrs. Cochin tripped over the threshold, clucking to her chicks. She flew upon the work bench, thence to a rafter and settled herself as if for the night.

"What do you think I am going to do with these chickens?" grumbled Jeremiah, trying to arouse her maternal solicitude. "Let the rats catch them, I don't care. They are not my chickens."

Mrs. Cochin looked down. She drooped a wing and shut an eye. Her attitude indicated that she would take proper care of her offspring as soon as their company had taken his welcome leave.

Again Jeremiah went through the scene at the fence. He gabbled his vain protestations. He groveled in the dust. He flung his unwieldly weight against the work bench and made many futile attempts to rise to Mrs. Cochin's superior elevation.

"You distract, humiliate me," he hissed. "Your heart is no larger than your head. You may stay there. I wash my feet of you," and suiting the action of the word, he waddled into the water trough and fluttered there.

The black pullet drew near. She was really a comely creature, Jeremiah thought, and he stopped fluttering. If it were not for the fatal glitter of Mrs. Cochin's blonde beauty, he might learn to care for demure Miss Dominie. He didn't know but he could, anyway, and gracefully curving his kingly neck he approached her.

"Good evening, Miss Dominie. You are looking very charming."

Miss Dominie pretended not to hear. She was too young to be entirely unmoved by his apparent admiration and she felt vaguely sorry for him; but the sun was very low and the sand man had passed her twice. She was looking for a spring bed on one of the low limbs of the cottonwood tree. Jeremiah followed her, babbling the story of his wretched loneliness, until they unwittingly crossed the path of his enemy, the man. Jeremiah's voice sank to a whisper and he hid behind a tree. Jeremiah is a goose about a good many things, but he knows when to lay dead.

The black pullet brushed against him and his heart warmed—but she was only enflight to the limb overhead. She leaned forward and spoke to him, drowsily: "I am sorry, Jeremiah. It is the old story and I can only advise you to get used to it. Don't you give up. Remember, you can have anything in this world you want if you keep after it until you get it; that is one of the fixed laws of the universe. I think you will find Mrs. Cochin in the end coop now. I saw Dollie gathering the chickens into her apron and carrying Mrs. Cochin by the wing. It might be well to excite her jealousy. You may say to her that I have at last consented to be yours. Tell her that you have come to bid her a final farewell. Give her back that scar she made on your neck and assure her that I am a jealous god and object to your even passing the time of day with her."

Jeremiah hastened to the end coop. Between the slats he recognized the profile of his beloved, hovering her fluffs. He tried to get his head inside, but the openings were too small and he could get in only as far as his eyes.

"I have come to say farewell," he breathed, hoarsely. "I have found one younger and fairer than you." His soul revolted when he said "fairer," for Jeremiah hates a lie, and even if Miss Dominie be a diamond it cannot be denied she is of the charcoal variety. "I may see you sometimes," he continued, "for I do not expect to leave the farm, and I wish you to know that the bright particular star of my life has blazed out and henceforth I am hers alone."

Jeremiah gushed on, rapturing over his new attraction until he half convinced himself; gushed on, rapturing, until Mrs. Cochin lifted her head and struck him with her bill.

"You make me very tired," she said. "If you have any respect for your lady love, keep your mouth shut about her. Don't let everybody know you are a goose. Of course, you would be just as big a goose if you kept your mouth shut, but everybody wouldn't know it. Even a gander owes that much to himself: not to let it get out how big a goose he is."

Saying this, she tucked her head and sang a soft lullaby to her fluffs, and their faint, sweet "peep, peep," lost in a low croon of content, sounded to forlorn Jeremiah like music behind the locked gates of paradise.

Sadly he clambered upon the back of an old wagon seat, half way between the end coop and the black pullet; and the friendly dark came down; and old Jeremiah lost the ache of self in the oblivion of sleep. EMILY FRANCES SMITH.

THE ORIOLE.

A flash of gold and black against the sky,
A perch upon the orchard's topmost bough,
A strain of such unmingled ecstasy,
The lingering echoes thrill the silence now.

A hanging nest so beautifully shaped,
So softly lined, close woven, firm and strong,
A bright-eyed mate to brood above the eggs,
And listen to that rhapsody of song.

A deep serenity of blue above,
A bubbling joy within beyond control.
Of hopes fulfilled, of Summertime and love—
Once more the golden story, Oriole!

—Lulu Whedon Mitchell.

THE ORCHARD ORIOLE.

The first of May finds the trees and shrubs well clothed in tender green, the air laden with the perfume of many blossoms, and bird life abounding. The number has been rapidly increasing since the coming of the meadow lark and robin that proclaim the approach of the moving host. Since their songs of joyous anticipation first were heard reverberating through field and orchard, almost every day has brought some new arrival, till now the air is alive with feathered creatures and hilarious song is rife. With ever varying motions they search for food and sport among the tree branches, or course through the vault of heaven. Nidification is now in progress in various stages of advancement, according to the species of bird.

But many of our summer visitors are still absent, yet just now is the season that one of the most interesting should make his appearance and join in the general jubilee. This is the Orchard Oriole, and he is among the gayest of the gay of all this merry throng.

Being a soft-billed bird, or insect eater, he defers his migration until insects have become plentiful. He is remarkably uniform in migration. Wintering south of the United States, he enters our borders about the last of March and with unusual regularity steadily makes his way onward till he reaches the northern limit of his range the latter part of May.

In the southern states and southern portion of the middle states east of the Rocky mountains this Oriole is one of the most abundant and familiar songsters that frequent the orchards and gardens.

He is a very conspicuous bird in both plumage and song. Although not quite so brilliantly attired as his cousin Baltimore, his coat of chestnut and black is very noticeable. His song is loud and gushing and resembles that of the rose-breasted grosbeak enough for the superficial observer to confound the two, but to the trained ear there is a decided difference. The notes, though uttered with force and rapidity, are varied, clear and sweet. His sojourn with us is short, but while here his rapturous refrain is heard almost incessantly. This sprightly bird is seldom, if ever, inactive, but with ever-moving pinion he flits from branch to branch, from tree to tree, and even when giving forth his gushing melody he quivers and sways.

Orchard Orioles are masters in the art of nest-building. The nest, a beautiful basket-like structure about three inches across and the same in length, is attached to half-upright or horizontal branches. Usually it is half pensile, though some are wholly pendent. It is always made of blades of long, slender grasses woven together in a most wonderful manner and lined with plant fiber and feathers. As the grass is invariably used while fresh and green, the nest is of a more or less green hue at all times, and consequently difficult to detect among the thick foliage. The four or five bluish-white eggs are spotted with a purplish color. At first the nestlings are fed on tiny insects and later on beetles and grasshoppers. The number of noxious insects a pair of these birds will destroy in a season is almost incredible.

ADDIE L. BOOKER.

FROM COL. CHI. ACAD. SCIENCES.

432

PRAIRIE WARBLER.
(Dendroica discolor.)
About Life-size.

COPYRIGHT 1908, BY A. W. MUMFORD, CHICAGO

THE PRAIRIE WARBLER.

(*Dendroica discolor.*)

This beautiful little Warbler cannot fail to awaken an interest in bird life in the mind of any person whose privilege it is to observe it in its chosen haunts. These are the shrubby pasture lands and the open woods of the eastern United States. It is more common in barren, sandy places of the Atlantic coast, where it seems to find an insect food suited to its taste. It not infrequently visits orchards, when in bloom, especially those in retired localities. Wilson, who wrote enthusiastically of the Prairie Warbler, says: "They seem to prefer open plains and thinly-wooded tracts, and have this singularity in their manners, that they are not easily alarmed, and search among the leaves the most leisurely of any of the tribe I have yet met with, seeming to examine every blade of grass and every leaf, uttering at short intervals a feeble chirr."

Dr. Coues was also an ardent admirer of this little bird and during his college days frequently hunted and studied its habits. He found the "inflection of the Prairie Warbler's notes a much more agreeable theme than that of a Greek verb," and possibly quite as profitable. He says: "There was a little glade just by the college, a sloping sandy field run waste with scattered cedars, where we could be sure of finding the Warblers any day, from the twentieth of April, for two or three weeks. Ten to one we would not see the little creatures at first. But presently, from the nearest juniper, would come the well known sounds. A curious song, if song it can be called—as much like a mouse complaining of the toothache as anything else I can liken it to—it is simply indescribable. Then perhaps the quaint performer would dart out into the air, turn a somersault after a passing midge, get right side up and into the shrubbery again in an instant."

The flight of the Prairie Warbler is neither strong nor protracted. Yet it is one of the most expert fly catchers among the Warblers. It is not a social bird and it is very seldom that more than two or three are seen together. A peculiar characteristic of this Warbler is that it does not try to lead an intruder away from the vicinity of its nest. Mr. Nuttall speaks of removing two eggs from a nest and replacing them in a short time. Each time he removed the eggs the female bird returned to the nest.

The Prairie Warbler is prettily colored. The back is marked with reddish-brown spots on an olive-green ground. Beneath the eye of the male there is a streak of black which is absent in the female. The throat and under parts are a rich yellow color, with small spots of black on the sides of the neck. The female is duller in color.

The nest is nearly always placed in the fork of a branch of either a tree or shrub and never far from the ground. A wild rose bush is sometimes selected. Mr. Welch describes one that he found in such a place. It was mainly constructed of "the soft inner bark of small shrubs mingled with dry rose leaves, bits of wood, woody fibers, decayed stems of plants, spiders' webs, etc." These were elaborately woven together and bound by "cotton-like fibers of a vegetable origin." The nest had a lining of fine fibers and horse hair. He also calls attention to the upper rim of the nest, it "being a strongly interlaced weaving of vegetable roots and strips of bark."

Mr. Nuttall describes the nest as not unlike that of a summer yellow-bird. He speaks of one that he examined as "being fixed in a trifid branch and formed of strips of inner red cedar bark and asclepias (milkweed) fibers, also with some caterpillar silk, and thickly lined with cud-weed down and slender tops of the bent grass (Agrostis.)"

It is difficult to understand why this bird should be called the Prairie Warbler, unless it is in order to distinguish it from those species that frequent less open places. A much more appropriate name is the Chestnut-backed Yellow Warbler. Though it is found in open places, this little bird would easily elude observation were it not for its peculiar notes, which Mr. Chapman describes as "a series of six or seven quickly repeated zees, the next to the last one the highest."

APRIL BIRDS AND FLOWERS OF THE MISSISSIPPI GULF COAST.

Fickle April, with its sullen showers and teasing, wayward moods, its alternate days of warm sunshine and chilling rain, still leaves us who live north of the fortieth parallel in doubt whether summer really intends to come or not. Not so on the gulf coast; langorous breezes incline one to take life easy, the sun high overhead has the true June fervor, and, if further evidence is needed to convince us, ripening strawberries and blooming roses tell us that summer is here. Gardens filled with huge, flaming amaryllis, fragrant calycanthus and a thousand and one shrubs strange to the northern eye, greet us in every yard. In front of the houses and along the streets, their purple fragrance welcoming every newcomer, stand the China trees, the haunt of busy bees and their indefatigable pursuer the kingbird, or bee martin.

In the lowlands a short distance back from the beach, the azaleas (Azalea nudiflora) are just dropping the last of their pink bloom, a bouquet thrown at the feet of all-conquering summer. Here and there in these jungles of yupon, bay, buttonwood, etc., appears a shrub clad in a filmy white mist. If this be the season for weddings, it must be that this is the bride that greets our eyes. A delicately beautiful bride she is, with arms that toss in the slightest breeze and now and then coyly shove aside the cloudy veil to take a farewell glimpse at the world she leaves.

The natives do not take this view of this shrub (Chionanthus virginicus). They have dubbed it "grand-daddy-gray-beard." Usually popular names have much to justify them, but in the instance just mentioned, and that of the brilliant red flower which gazes at us from the underbrush, they are suggestive of African superstition rather than Saxon sentiment. The melancholy local fancy sees in these flaming orbs only the power of evil, hence the name "Devil's eye." If I could be assured that the devil's eye is really as beautiful and kind in its expression as its floral representative I would be willing, like Emerson, to call its possessor "the dear old devil."

Let us go back to the beach and stroll along the shell road, which parallels the shore all the way from Gulfport to Biloxi. Perhaps the glare of the white road is not pleasant to the eyes, but the deep green of live oak and long leafed pine is restful, the mingled fragrance of the salt breeze of the gulf, the resiny odor of the pine and the blossoming wistaria charm the senses and lull us into rapturous content. Only a few of the trees and shrubs which border the highway are of the kinds familiar to observers in Ohio and Illinois. Now and then a water oak or a sweet gum appears; but otherwise in the cypress, pine or live oak of the larger growth, or in the palmetto, Spanish dagger and rattan vine of the undergrowth, the eye looks in vain for old acquaintances.

The live oak certainly has individu-

ality. Shorter and more spreading in its habit of growth than most of its kind, its limbs are gnarled and knotty, strong and muscular with its wrestling with the hurricanes that sweep the bosom of the gulf. It loves the white sand just a few feet above high tide, where it stands as a protector for the weaker growth between the tossing waters and the great pine forest. As is the case with human beings, this vigorous conflict with its surroundings does it good; for no place in the South that I have been have I found the live oaks as plentiful or as vigorous as on this strip of barren sand.

The birds know a good thing when they see it; hence they are well represented here at this season of the year. Our old acquaintance of the Maumee Valley, the Maryland yellow throat, with his cunning black mask and his cheerful if not wholly musical "Wichety, wichety, wichety," greets us from a perch on a rattan vine, but on our nearer approach dives down into the palmettos, where only the noise made by his tiny feet indicates his whereabouts. Two other warblers, the hooded and the redstart, a little belated, perhaps, have stopped here on their way north to the old nesting grounds on the Kankakee and the Hudson. The most numerous as well as the most conspicuous element of the bird population is the summer tanager, whose intensely scarlet coat adds a touch of vivid color very grateful to the eye. Nearly every oak contains one of these redcoats, whistling a solo for our benefit or discussing the details of housekeeping with his more sober coated little wife.

Almost as numerous as the tanagers, and even more interesting, are the orchard orioles. Their song has more of the fire and ring of true music, a compensation probably for the comparative dullness of their garb. In nest building the orchard oriole is an artist. I remember one day finding in a small water oak a nest so carefully woven out of excelsior as to make me think the bird could knit if he would only turn his talent in that direction. Where twine and excelsior are not easily obtained, no doubt they utilize the long streamers of Spanish moss which hang from half the trees in the gulf country.

Flying about in the gardens, as tame as robins on northern lawns, or sharing the live oaks with the tanagers and orioles, are a multitude of mocking birds. There must be something in Maurice Thompson's suggestion in "By Ways and Bird Notes" that along this coast the mocking birds find those berries and seeds best adapted to develop a high degree of musical ability and artistic expression, for these birds certainly surpass their brethren found a few hundred miles to the north.

Besides these land birds there are a multitude of sea birds more conspicuous on account of noise and numbers than bright coloring or attractive ways. The herring gull is very plentiful on this coast, wherever sand flats and shallow water offer attractive feeding grounds. It is a pleasant sight to see a dozen of these pearl gray creatures turning and wheeling, as free and easy as the wind. Just in shore from where the gulls are flying are some fish crows, a thoughtless, noisy set, contented to feast on the crabs and stray minnows which have eluded the watchful gulls. At the edge of the water, just where the wavelets of the receding tide curl and swish before turning back to join their fellows, a couple of sandpipers are running a race, now and then stopping to pick up some tidbit left by the water. A shadow flits along the sand. We look up. A great fish hawk or osprey soars seaward. He sails past the noisy crows, past the graceful gulls and steers for Ship Island, that line of darker haze where sky and ocean meet. Truly, April is the season to visit this coast.

James Stephen Compton.

BIRTH STONES.

From the earliest times and among all peoples there seem to have been sentiments and superstitions connected with gems. The ancient use of gems is proved by their being found in the oldest tombs of Egypt and by their mention in the earliest books of the Bible, and no less ancient seem to be the mystic properties and powers ascribed to them.

Not only was the power of driving away evil spirits and producing all sorts of "luck" long attributed to them, but as late as the beginning of the eighteenth century reputable physicans were accustomed to mix fragments of them in their medicines and to use them as charms. The study of the uses of gems in this way forms a subject of much interest, but we may confine ourselves here simply to the custom which made a particular gem appropriate to a corresponding month of the year.

The first arrangement of gems into a group of twelve of which we have any record is that in the Book of Exodus. Here in the twenty-eighth chapter, verses 17-19, are prescribed in order, twelve precious stones, which shall be set in the breastplate of the High Priest. The list is repeated in the thirty-ninth chapter of the same book, verses 10-12. In the context it is prescribed that the stones shall be set in four rows and that upon them shall be engraved the names of the Children of Israel, one for each stone. As to the particular stones as they are known to the modern world, which are indicated by the Hebrew words, authorities differ, but in the authorized version of the Bible they are given as follows:

Sardius, topaz, carbuncle,
Emerald, sapphire, diamond,
Ligure, agate, amethyst,
Beryl, onyx, jasper.

It is not probable, however, that these names indicate in each case the corresponding stones of modern usage. Thus it is quite unlikely that the Hebrews could have engraved a name upon the diamond even if they could have obtained one of sufficient size. Again, the words emerald and carbuncle are undoubtedly interchanged in the above list and the ancient topaz is known to have been the modern chrysolite. In the revised version the word jacinth is substituted for ligure and amber is given as a marginal rendering for the same. There are also given marginal renderings for others of the gems, as follows: ruby for sardius, emerald for carbuncle, carbuncle for emerald, sardonyx for diamond, chalcedony for beryl, and beryl for onyx. The modern equivalents of the terms recognized by secret orders which use them in symbolism are:

Carnelian, chrysolite, emerald,
Ruby, lapis-lazuli, onyx,
Sapphire, agate, amethyst,
Topaz, beryl, jasper.

Two lists of precious stones quite similar to those of the Book of Exodus are given in other places in the Bible, one in Ezekiel 28:13, where "every precious stone" is said to have been the covering of the King of Tyre, and again in Revelation 21:19-20, where twelve different precious stones are mentioned as garnishing the foundations of the wall of the Holy City. The names and order of these in Ezekiel are, in the authorized version, as follows:

Sardius, topaz, diamond,
Beryl, onyx, jasper,
Sapphire, emerald, carbuncle.

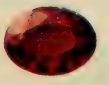
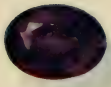
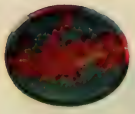
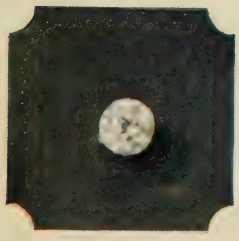
To these the Septaguint adds the following:

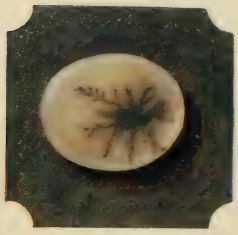
Chrysolite, ligure. agate.

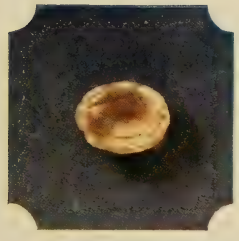
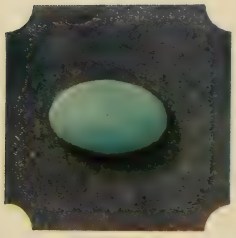
The revised version gives marginally, ruby for sardius, carbuncle for emerald, and emerald for carbuncle. In Revelation the list as given in the authorized version reads as follows:

Jasper, sapphire, chalcedony,
Emerald, sardonyx, sardius,
Chrysolite, beryl, topaz,
Chrysoprase, jacinth, amethyst.

The marginal renderings give lapis-lazuli for sapphire and sapphire for jacinth.



GEMS LOANED BY FREDERICK J. ESSIG.

Garnet (January.)
Diamond (April.)
Ruby (July.)
Opal (October.)

BIRTH STONES.

Amethyst (February.)
Emerald (May.)
Sardonyx (August.)
Topaz (November.)

Bloodstone (March.)
Agate (June.)
Sapphire (September.)
Turquoise (December.)

Though in each of these lists only twelve precious stones are mentioned, there is nothing to indicate that their use was in any way connected with the months of the year. Just when it became the custom to designate each month by a particular gem or how the custom originated is impossible to determine. The custom seems to have sprung up in modern Europe some time during the fifteenth or sixteenth century. Whether it originated in the twelve gems of Aaron's breastplate as many believe, or was introduced by astrologers from the Arabians as others think, is not yet known.

The modern practice of considering the stone of each month especially appropriate to persons born in that month is probably still more recent in its origin. In former times gems could be possessed only by rulers or the very wealthy, so that their general use in the above manner was not possible. But now that nearly every one can own a gem of some kind the possession of "birth stones" and the attachment of special sentiments to them has become common. The custom is a pretty one, and is to be commended, for the stones are imperishable and the sentiments ascribed to them represent the accumulated traditions of many ages, races and peoples.

As to the particular stone which is to be considered appropriate to each month usages differ. Such differences have doubtless arisen from the desire to introduce gems which were formerly little known or unattainable on account of their cost, as substitutes for stones formerly prized but now held of little value. Thus the precious opal now much admired was hardly known in former times. By some it is now used as the birth stone of the month of October, while others retain the beryl. The diamond has been introduced in modern practice in quite a similar way. The carnelian and chrysolite by some still used for the months of August and September are stones held of little worth at present, and hence others are usually substituted. The particular order and kind of stones adopted in the accompanying plate is given in accordance with some verses quoted in a pamphlet first published by Tiffany & Company, of New York, in 1870. The author of the verses is not known, nor is it known by just what authority these gems were chosen. The choice, however, seems as satisfactory as could be made. Some of the verses have been quoted in previous numbers of this magazine, but they may here be given entire:

JANUARY.

By her who in this month is born,
No gems save garnets should be worn;
They will insure her constancy,
True friendship and fidelity.

FEBRUARY.

The February-born shall find
Sincerity and peace of mind,
Freedom from passion and from care,
If they an amethyst will wear.

MARCH.

Who in this world of ours their eyes
In March first open shall be wise,
In days of peril firm and brave,
And wear a bloodstone to their grave.

APRIL.

She who from April dates her years,
Diamonds shall wear, lest bitter tears
For vain repentance flow. This stone
Emblem of innocence is known.

MAY.

Who first beholds the light of day
In spring's sweet flowery month of May,
And wears an emerald all her life,
Shall be a loved and happy wife.

JUNE.

Who comes with summer to this earth,
And owes to June her hour of birth,
With ring of agate on her hand
Can health, wealth and long life command.

JULY.

The glowing ruby shall adorn
Those who in July are born;
Then they'll be exempt and free
From love's doubts and anxiety.

AUGUST.

Wear a sardonyx, or for thee
No conjugal felicity;
The August-born without this stone,
'Tis said, must live unloved and lone.

SEPTEMBER.

A maiden born when September leaves
Are rustling in September's breeze,
A sapphire on her brow should bind—
'Twill cure diseases of the mind.

OCTOBER.

October's child is born for woe,
And life's vicissitudes must know;
But lay an opal on her breast,
And hope will lull those woes to rest.

NOVEMBER.

Who first comes to this world below
With drear November's fog and snow,
Should prize the topaz' amber hue—
Emblem of friends and lovers true.

DECEMBER.

If cold December gave you birth,
The month of snow and ice and mirth,
Place on your hand a turquois blue:
Success will bless whate'er you do.

The sentiments further ascribed to the above gems are, as given in a pamphlet by Mr. George F. Kunz and published by Tiffany & Company, in 1892, the following:

Garnet.—Insures Power, Grace and Victory to the wearer.
Amethyst.—Deep Love; prevents Intoxication.
Bloodstone.—Courage and Wisdom.
Diamond.—Purity; Preserves Peace, Prevents Storms.
Emerald.—Immortality, Conquers Sin and Trial.
Agate.—Health, Wealth and Longevity.
Ruby.—Charity, Dignity and Divine Power.
Sardonyx.—Conjugal Felicity; Prevents Misfortune.
Sapphire.—Constancy, Truth and Virtue.
Opal.—Hope, Innocence, Purity.
Topaz.—Friendship and Fidelity.
Turquois.—Prosperity, Soul-cheerer.

OLIVER CUMMINGS FARRINGTON.

APPLE BLOSSOMS AND THE WARBLERS.

It was a cold, rainy day toward the last of May. The apple trees were a mass of pink and white, but the fast gathering petals on the green carpet told the story; not for long would be wafted in through each window a whiff of such perfume as only Dame Nature, May and Company can distill. Unfortunately, I was in no mood to appreciate the beauties of a spring rain, for it was a very evident fact that the bad weather would prevent our anticipated bird walk. This fact I was bewailing, looking forlornly from the window out into the dripping world, when lo, I found that, contrary to expectations, the mountain does on occasion appear unto Mahomet!

On the lawn north of our house are nearly a dozen apple trees, two of which have branches overhanging the roof. I noticed that the foliage was in livelier motion than is usually caused by an easy shower, and on closer examination discovered that the trees were fairly alive with flitting forms, birds—warblers in all their glory. This was long before noon, and it was but the beginning of a state bordering on ecstasy for me which ended only when darkness fell, as it gave me the opportunity for making the acquaintance of a family, straggling members of which, only, I had met since my interest in feathered friends awakened.

To my delight I immediately brought within range of my glass the little fellow which I had seen the year before in the same tree, and had described in my note-book as "wearing a sun burst of black on a yellow vest." On this occasion he was much in evidence, and the details of his handsome coat could be plainly detected. He is mostly black, and you may distinguish him by the broad white patch on his wings and the yellow breast which is decorated by a black pendant necklace. He is the magnolia warbler.

The chestnut-sided was well represented in the flock, and was an old friend. With us here in New Hampshire, he stays through the summer, but it is only

at this season that we are apt to meet him. One recognizes him by his clear greenish-yellow crown and by the clearly defined chestnut streak on either side of his white vest.

Of course the Lord of the Manor is the Blackburnian warbler. To my great delight, he brought his wonderful flaming breast within four feet of me as I sat in one of the upper windows, watching him explore the branches. Mark him well. His upper parts are black, while his crown, throat and breast are flaming orange. He, too, wears a white vest, marked at the sides with black. So beautiful is he that words fail to describe him, while to see him flitting about among the apple blossoms was indeed "a picture no artist could paint."

The next on my list was a discovery, and one over which I was jubilant. He was an elusive little fellow, and led me out into the rain and kept me standing there with the drops trickling down my face as I searched the branches for him. He was the daintiest sprite imaginable. whose blue-gray coat was like satin and whose white breast shading from a yellow throat could not make him conspicuous. It was only when I discovered that his back was a beautiful shade of bronzy-greenish-yellow that I knew he was the parula warbler, the blue yellow back. Then I went to the authorities to learn more about my stranger. Then I read that he wears another distinguishing mark, a brown streak across the throat. Back to the garden I went. Eureka! he satisfied all conditions, and was named! During this shower of warblers the parula was the most numerous species, excepting, perhaps, the chestnut sided.

A redstart came in for its share of admiration, and his beauty deserved it, but his evident appreciation of his own charms as he dashed here and there, opening and closing his fan-like tail, rather detracted from his character as he was viewed alongside his beautiful companions, who, to say the least, are modestly unaware of their charms.

Later, another discovery was made, and one that puzzled us for some time. At the first glimpse of him we said, "Chickadee, of course," for we saw his black cap and his general black and white aspect. Then as he flew to a tree near the window, and we marked every point possible, we found that his back was closely striped with black and white, that his breast and belly were white, and that his wings were tinged with olive and had two white bars. We could not name him, and to my amazement Miss Wilcox did not have such a one in her "Common Land Birds of New England." so not until I went to "Birdcraft" did I learn that my visitor was the black poll warbler. He was always intent upon his own affairs, seemed rather superior to the common herd, and was the last one of the visitation to leave me.

The Maryland yellow throat was here, too, away from his native alders, but. seemingly not one bit confused to find himself an orchard bird. Perhaps he was only "going a piece" with his relatives and connections as they journeyed north. He is a beauty, and you may hear him in any alder swamp calling "witchy-titchy, witchy-titchy."

I searched and searched for the black and white creeper whom we often see, but evidently he did not like a mixed crowd, for I did not discover him until several days later, when the main flock had passed on. The rest, however, were on every side, and so tame and confiding were they that a raised sash, or an ecstatic shout to a watcher at another window did not appear to disturb them in the least.

They were voiceless, though, intent upon nothing but dinner, except the redstart, who seemed to take settlement life as somewhat of a joke and, as he careered about, occasionally called to "sweet, sweeter, sweet."

So the day passed, a continual surprise party, and the next day came, and still the flock lingered. But when the rain ceased, and the sun reappeared, they lifted their wings and hastened to pastures new, leaving only a straggler here and there. Will a spring rain this year find them passing over my apple trees? So may it be. GRACE E. HARLOW.

RURAL RAMBLES.

Over the hills as the pewee flies,
'Neath the glorious blue of summer skies;
Through briery wastes where wild birds dwell,
Deep in the shade of some rocky dell;

Where the pennyroyal and mint smell sweet,
And the blackberry ripens in cool and heat;
Down the winding path by the rippling rill,
By the old-time creek, by the dear old mill;

By the vine-clad fence, in the alder's shade
Where woodchucks and merry squirrels invade;
Through spreading fields of daisies bright,
Where butterflies roam from morn till night;

Past upland and hollow whence scents are blown
Of clover blossoms and flowers well known;
Over swamp and marshland where red-wings sing,
While in flag and tussock their nest they swing;

Through ancient orchards, o'er meadows green,
Where roses and buttercups girt the stream;
Away through the woodlands' emerald shade
By sparkling springs, through fern-clad glade,

By old quarry ponds where memories cling
And gay swallows circle on tireless wing;
From dawn's early light till twilight's gloaming,
With scenes ever changing, there's pleasure in roaming.

—Berton Mercer.

THE HORSE.

(*Equus caballus.*)

There are many objects which are so commonly seen that we deceive ourselves by thinking we know much about them, and yet should we make a special study of these same objects, often we would find ourselves woefully ignorant in regard to some of their most distinguishing characteristics.

Every day of our lives we see Horses. These frequently move with exquisite grace and beauty, stepping daintily and proudly as if hardly deigning to remain on earth, but seeming just ready to rise and fly as did the fabled winged horse Pegasus. With rapidly moving feet

"The landscape speeds far away behind
Like an ocean driven before the wind,"

and we look on only to admire and wonder. And yet how comparatively few of those who watch the fascinating motion of a rapidly moving Horse know that the beautiful animal is running on only one toe, for that indeed is all it possesses for each foot. The foot proper extends as high as the apparent knee. This is in reality the wrist or ankle, and the apparent foot is but a finger or toe corresponding to the middle finger and middle toe of the hand and foot of man. The hoof may be likened to the finger nail. In fact, it is a great, thick, enlarged nail, finishing and protecting the toe above.

The Horse belongs to a great division known as the odd-toed animals. There are about twenty-five species of these animals now existing and they are divided into four families, the one-toed Horses, the tapirs with four toes in front and three behind; the rhinoceroses with three toes, and the cony family with four toes on their fore feet and three on the hinderfeet. These four families are very different in their ways of living and are so unlike that one would not expect to find them relatives.

The native country of the Horse seems to be nearly the entire northern hemisphere, for fossil remains are found throughout this region, but in America the Horse (never found south of Alaska) became extinct, and for a time there were no Horses on the western continent. After the discovery of America, Horses were imported into the country and in time some escaped from their owners and formed herds which have multiplied until there are a great many wild Horses now roaming over the new world.

In Europe wild Horses also became extinct, but at a conparatively recent date; but in Asia and Africa there seems to be no time when the wild Horses have not been roaming over the plains and tablelands, as free as the wind.

On the steppes of southeastern Europe there are great herds of peculiar Horses, called tarpans. These are indeed freedom-loving animals and one can but feel a certain sympathy with their unwillingness to be tamed. They are a rather small Horse with thin, strong legs, a rather long, thin neck and a comparatively thick, blunt-muzzled head. They have small, brilliant, wicked eyes; the hair is thick and short in summer and inclined to curl; in winter it is longer and coarser and on the chin becomes almost like a beard.

Not content to roam in freedom by themselves, they will, if possible, entice domesticated Horses to join their number. On this account they are persistently hunted, as they do considerable damage.

The great herds are divided into families, each family led by a stallion who is sole ruler, taking the best of care of his subjects, but permitting no irregularity. These herds wander from place to place, usually running against the wind, and their keen sense of hearing warns them of approaching danger. The stallions do not fear beasts of prey and will sally forth against wolves and beat them down with their fore-hoofs.

The earliest representations of Horses and the fossil remains of the prehistoric animals show them to be of rather small size and not unlike the tartans, suggesting the idea to some minds that the tar-

tans were the ancestors of the modern domesticated breeds, but the facility with which the Horse will resume its wild state makes opinions of little value.

The South American wild Horses, called "the wild Horse of the Pampas," were all descended from a few domesticated Horses left in the town of Buenos Ayres, which was abandoned some time after the year 1535. These Horses are called cimarrones. They roam in immense herds and are considered a nuisance, as they consume good pasturage and also lead away the domestic Horses. The mustangs of Paraguay, although domestic Horses, vary little from the conditions of the wild Horses of the pampas, as they are much neglected, live out of doors all the year around and really degenerate for want of care.

A. von Humboldt gives an interesting description of the life of the Horse in the Llanos, the great grassy plains lying further to the north. When the never-clouded sun turns the grass to dust, the Horses and cattle roam about, pressed by hunger and thirst, and by inflating their nostrils endeavor to discover by the damper air currents localities where the water has not yet evaporated.

The Mules, using more intelligence, beat with their fore-feet the prickly exterior of the melon cactus and quench their thirst with the watery pulp.

When finally the rainy season begins, the Horses still meet with danger and trouble, as the swelling rivers surround their grazing places and the colts are frequently drowned. Jaguars often lurk in the tall grass and crocodiles are a constant menace. Even among the fish there are dangerous enemies. The electric eels "can kill the largest animals by means of their powerful discharges if their efforts are concentrated upon certain portions of the body."

The Horses are often their own enemies. Becoming frantic with terror, in a frenzy of fright, they destroy themselves by dashing against rocks or rushing over precipices.

There is much that is interesting in regard to the half-wild Horses of North America. These are all descendants of imported varieties, and while owned by the various ranchmen, they have the freedom of the range or prairie. Ofter they are seen by their owners only at the annual "round-up," when they are driven into the "corrals" in order that the colts may be marked with the brand of the owner.

One can spend much time studying the instructive facts in regard to the interesting wild and half-wild Horses of the globe, and still feel that much remains unlearned. Yet all will admit that the most beautiful and perfect types of Horses are those bred under the direct supervision of man.

Of those which attain the greatest speed, most prominent are the English thoroughbred, the American race horse, and the Trakehnen Horse, the finest Horse of German breed.

These are all the result of many years of careful selection, each finding among its ancestors the noted Arab steeds, "praised as the noblest animal of creation by the naturalist, the expert and the poet." The Horses of the Levant and the Barbary have also aided to render the English thoroughbred the greatest race horse of the old world. The American trotters have not been behind, for as far back as 1889 the maximum recorded pace was one mile in two minutes and three and three-fourths seconds.

For the practical uses of life there seem to be as many breeds of Horses as are necessary to meet the varying requirements of an industrial civilization. We find all kinds and sizes, from the heavy and powerful Percheron or Clydesdale cart Horse, standing sometimes over six feet in height, to the smallest Shetland pony which may be even less than three feet at the withers, and we find Horses of various colors, of various lengths of mane and tail, and of varying degrees of intelligence.

While all Horses are not well treated, yet no animal is so respected and loved by man and no other animal has become so close a companion. While many nations as a whole have loved and cherished their Horses, the Arab steeds have been most appreciated and have entered closest into the daily life and thought of their masters. Only when it has attained its seventh year do they consider the education of the Horse complete and meanwhile it

has been the constant companion and friend of its master.

In the extravagant and poetical language of the East, one Arab thus speaks of his beloved Horse: "Do not tell me that this animal is my horse, say that he is my son. It runs more quickly than the wind of a storm, more swiftly than the glance that sweeps the plains. It is pure as gold. Its eye is clear and so keen that it sees a hair in the dark. It overtakes the gazelle in its course. To the eagle it says: I hurry on like you. When it hears the shouts of girls it neighs with joy, and the whistling of bullets rejoices its heart. From the hands of women it begs for alms; the enemy it beats in the face with its hoofs. When it can run to its heart's desire, it weeps tears. It recks not whether the sky be clear or the blasts of the desert obscure the light of the sun with dust; for it is a noble steed and despises the rage of the storm. There is no other in this world that could vie with it. Swift as a swallow, it courses on; so light is its weight that it could dance on the breast of your beloved and not annoy her. It understands all like a son of Adam, and all it lacks is speech."

JOHN AINSLIE.

A MELODY.

Afar and near, afar and wide,
The murm'ring chant of a running stream,
Across the rocks to the brimming tide
Of the shining sea, its waters gleam.

Low in the beeches, hid from sight,
A robin is singing a song so sweet,
Its rapturous melody seems a flight
Of song from Heaven's own azure deep.

O fateful river, now gleaming, now dark,
Like my checkered life of shadow and sun,
But always through it the song of my heart
Like the robin's vesper, to God is sung.

But ever the river rolls along
With manifold crews of human souls;
And ever, the robin's clear, sweet song
Is heard afar as the river rolls.

—Amanda M. E. Booth.

THE VERBENAS.

"Hallowed be thou, Vervain,
As thou growest on the ground,
For in the Mount of Calvary
There thou wast first found."

The name Verbena in the language of flowers signifies enchantment. It is an ancient Latin name for a common European Vervain. As a classic name, however, the name Verbena was applied to any branch that was used in the celebration of religious rites. Though the Vervain of our illustration belongs to this genus it is not the same plant that was held in high esteem and as a sacred herb by the Greeks and Romans, yet it is generally believed that the "herba sacra" of these ancient peoples was a Vervain. And even to-day the name "Herb of Grace" is sometimes applied to the common wayside flower which we illustrate.

Virgil and other classic poets speak of the Verbena as used in altar decorations and as a garland for beasts led to the sacrificial pyre. Virgil, in his Eclogues, refers to it as a charm by which to recover lost love. Plinius states that no plant has been more honored than the Verbena among the Romans. Mr. Knight, in his biography of Shakespeare, says: "Some of the children said that a horseshoe over the door, and Vervain and dill, would preserve them, as they had been told, from the devices of sorcery."

The genus Verbena includes about one hundred and ten species, often of a weedy character. They are chiefly American. In fact, in 1836, Loudon spoke of the Verbenas as "a genus of weedy plants." At the present time this statement is not true of many species, for under the florist's influence they have been brought to a high degree of perfection and they are well thought of as ornamental plants. Even in Loudon's time there grew on the prairies of South America several species of great beauty which he would not have classed as weeds had he been familiar with them.

The Blue Vervain is one of the weedy members of the genus. It is common along our waysides and with its erect form and long spikes of blue flowers would be quite attractive could the flowers all mature at the same time. It has frequently been placed under cultivation, but has but little value as a garden flower. But in the waste grounds of roadsides it is a pleasing sight even if its leaves are gray with dust.

This plant is sometimes called Simpler's Joy. It was given this name because in years gone by it was a popular herb with the "simplers," or gatherers of medicinal plants.

THE BLUE SPRING DAISY.

(*Erigeron pulchellus.*)

Daisy-like and modest, is not the name the Blue Spring Daisy much more appropriate for this hardy little plant than Robin's or Poor Robin's Plantain, by which it is often known? What has it to do with the robin? To be sure it sends forth its stems and blossoms in April when the birds are happiest, yet the robins appear much earlier. Then, too, the robins are not poor, for they are the best cared for among birds. Its flowers are often of a bluish cast, though they may be violet or even nearly white; they appear in the spring and are daisy-like.

The botanist knows this plant of the hills and banks as one of the species of

495 ROBIN'S PLANTAIN OR BLUE SPRING DAISY.
(Erigeron pulchellus.)

BLUE VERVAIN OR WILD HYSSOP.
(Verbena hastata.)

FROM "NATURE'S GARDEN"
COPYRIGHT 1900, BY
DOUBLEDAY, PAGE & COMPANY

the genus Erigeron. This name is indicative of one of its characteristics. It is from two Greek words meaning spring and old man. Old man in the springs or early old is an appropriate name, for the young plants are quite hoary and this hairiness remains throughout its life.

The Blue Spring Daisy is not alone, for it has about one hundred and thirty sister species widely distributed throughout the world, but they are more abundant in the Americas, nearly seventy of these occurring in North America.

This unassuming plant frequently grows in large patches, yet does not crowd its fellows; often it grows in localities which the more delicate and brilliant of the early flowers are wont to shun. This may have been the theme which inspired these lines of the poet:

I love the lowly children of the earth!
I linger 'mid their artless ways
To feel their kinship and their fragile worth,
And catch their speechless praise.

Though the species of Erigeron are coarse growing and unpretentious plants, they lend themselves readily to garden cultivation. They are easily propagated and make good borders, for they are much more beautiful when massed than when allowed to develop as single plants. The forms vary greatly in color—orange, creamy, white, rose, violet, purple and bluish illustrate the range of color. The yellow centers heighten the color effect.

The flowers resemble those of the asters and the Blue Spring Daisy might be mistaken for an Aster. But few of the Asters, however, blossom earlier than the month of August and none before July, and the Spring Daisy does not blossom, as a rule, later than in June.

Miss Lounsberry says: "What strange idea filled the pretty head of Robin's Plantain when it decked itself out to look like an Aster we do not know, but its deception is very transparent and we readily discover that it is not one of the Asters." May we not look upon it as the harbinger of the true Astors?

THE LITTLE FEATHERED BOYS AND GIRLS.

In fragrant fields where graze the herds
And all along the old highway,
The boys and girls among the birds
Call each to each the livelong day.

Bob White, Bob White, pipes out the quail
From old fence posts and mossy stones,
In meadows where the ripened grain
In golden stacks awaits the flail.

A little tuft of feathers grey
That snaps its bill in eager glee
When e'er a fly is caught on wing,
Full forty times calls out Phoebe.

When fragrant dews fall from the sky—
And sinks the sun behind the hill,
From dark'ning woods rings out the cry,
O Whip poor Will—O Whip poor Will.

—Blandina D. Miller.

THE COTTON PLANT.

(*Gossypium barbadense*, L.)

Theise men ben the beste worchers of Gold, Sylver, Cottoun, Sylk and of all such things of any other, that be in the World.

—Mandeville, Travels, p. 212.

The cotton plant is undoubtedly one of the most useful plants in the entire vegetable kingdom. As with other exceedingly useful, though common things, we are so accustomed to the blessings we owe to this plant that we almost entirely lose sight of its identity and very existence.

There are a number of cotton yielding plants which belong to the genus Gossypium of the Mallow family (Malvaceæ), the same family to which the Hibiscus and garden mallows belong. The most important species are G. barbadense, which yields the noted Sea Island cotton, and G. herbaceum. Both are extensively cultivated in the United States, the latter species more than the former. Other more or less cultivated species are G. arboreum, G. religiosum and G. punctatum. The cottons are handsome plants with large, showy yellow or purple flowers. They vary from comparatively small and herbaceous to shrubby or even approaching the dimensions of trees. The seeds are borne in a three to five lobed capsule, which ruptures at maturity, thus allowing the snow-white cotton head to appear. The outer surface of the seeds is covered with slender fibers, each fiber being simply a single, greatly elongated epidermal cell. The individual fiber is flattened, twisted upon its axis, flexuous, from one to two or three inches in length. These fibers constitute the cotton of the market, which finds so many important uses in human economy. Of course primarily nature intended these fibers for the special use of the plant itself; being a means of aiding in the distribution of the seeds, and no doubt also serving as a protection against being eaten by animals, as the dense, more or less intertwined growth of insipid, tenacious fibers constitute anything but a tempting morsel. Man, by his ingenuity and skill, has been enabled to utilize this product of nature in his own behalf.

The commercial and technical uses of cotton date back to very remote antiquity. Cotton fabrics were in use in China as early as 2300 B. C. At the discovery of America, beautiful cotton fabrics were found in Brazil, Peru, Mexico and the West Indies. According to the eminent Greek historian and traveler, Herodotus, cotton clothing was quite universally worn 484 B. C. The finest cloth came from the valleys of the Ganges, and not until the close of the campaigns of Alexander the Great did the manufacture of cotton cloth become a distinctive industry in Greece. It appears that during the time of Pharaoh cotton was yet a rare article since it is recorded that this eminent ruler presented Joseph with a costly coat made of this material, as a memento of high esteem. It is also a notable fact that the Egyptian mummies are swathed in linen instead of cotton cloth. No cotton seeds have ever been found in the ancient tombs of Egypt, nor is the plant represented upon the ancient mural paintings of that country.

In the eastern continent India was no doubt the principal cotton growing country; even China obtained its principal supply from that source. Not until about the ninth century of our era was cotton extensively cultivated in China. About the second century Arabian merchants brought cotton from India and began to cultivate it in the vicinity of the Red sea, and from thence it gradually found its way into Spain about the sixteenth century, and from Spain into Italy and Greece.

No one knows exactly when cotton began to be used and cultivated in the western continent; we know that it must

FROM KŒHLER'S MEDICINAL-PFLANZEN.

COTTON.
(Gossypium barbadense.)

CHICAGO
A. W. MUMFORD, PUBLISHER

have been used a long time before the discovery of America by Columbus, for reasons already given. Mexican and South American mummy cloth is found to consist largely of cotton.

Cotton is now extensively cultivated in the warmer countries of both hemispheres—in the southern United States since the sixteenth century. The cotton plant is in reality a perennial, becoming quite shrubby with age, but in cultivation it is treated as an annual, being grown from seeds planted each spring. Three or four seeds are planted to each hill, the hills being about three feet apart. After sprouting the weaker individuals are removed, and at the end of three or four months the remaining carefully cultivated plants are pruned to make them more spreading and give a better yield of cotton. The plants grow quite rapidly, the cotton maturing about five months after planting. With the exception of the pruning, the planting and cultivation of cotton in the southern states is not unlike the planting and cultivation of corn in the middle states.

The cotton is picked by hand into bags or baskets, spread out and dried, and finally carted to the cotton gin, a machine invented by Eli Whitney (1793), which separates the fibers from the seeds. The cotton is now pressed into bales, weighing from 400 to 500 pounds, for shipment. The cotton fiber is subjected to further processes of cleaning, carding, etc., before it is ready to be manufactured into cloth fabrics, thread, etc.

Nearly all parts of the cotton plant find a use. After the cotton is picked, the stalks are burnt upon the fields or "plowed under" to serve as a fertilizer for the soil, which would otherwise become impoverished very rapidly. The bark of the root is collected and employed medicinally, its medicinal properties being highly lauded by the negroes of the South. The seeds yield the cottonseed oil, which is not unlike olive oil. This oil, however, varies in purity, the purest being used as an adulterant of olive oil or as a substitute for this oil. The less pure grades are used for burning, but more in the preparation of woollen cloth and morocco leather, also as a lubricant for machinery. It is also used as a substitute for almond oil and olive oil in many pharmaceutical preparations and in the manufacture of soap. The seeds from which the oil has been expressed constitute the cottonseed cake, used as a nutritious cattle fodder. In the South a tea made from the seeds is considered a useful remedy in the treatment of malaria and dysentery. A tea made from the leaves is much used medicinally in Jamaica and other islands of the West Indies.

It is, however, the fiber, or cotton, which is the important part of the plant. It would be a tedious and difficult task to describe, or even enumerate, all of the uses to which it is put. It is used as wadding in clothing and quilts. It is used by the bacteriologist in the filtration of air; air passed through a layer of cotton is germ free. It is also used in the filtration of liquids. Purified and variously prepared, cotton is almost indispensable in surgery. It forms an excellent protective covering for wounds, ulcers, burns and scalds. It absorbs secretions and arrests hemorrhages. It is used in the preparation of gun cotton (pyroxylin) nitro-cellulose, collodion and flexible collodion. Gun cotton is prepared by treating cotton with strong nitric acid and is used in gunnery, blasting and in photography. Collodion (collodium) and flexible collodion are used in surgery, in the treatment of ulcers, skin diseases, to arrest hemorrhages, applied to inflamed areas, etc.

The most important part of the entire plant is the fiber or cotton as it is used in the manufacture of cloth. The modern method of cotton manufacture does not date back further than 1760. Prior to that time weaving and spinning were altogether domestic. At first the work was done by means of the ancient distaff and spindle, more recently the spinning wheel. By these only one thread could be produced at a time and, as may be imagined, the process was very slow. Furthermore, the yarn produced was inferior. A fairly good thread could be spun from flax, but the softness, shortness and unevenness of the cotton fiber made it difficult to produce a good uniform yarn by means of such crude apparatus. In fact, so poor was the yarn

produced that in weaving it was used only for the weft (transverse thread), while linen, woolen or worsted yarn was used for the warp (longitudinal thread), in order that the cloth might have sufficient durability. During the middle of the eighteenth century the machinery for spinning was much more imperfect than the machinery for weaving. As a consequence, it became necessary to produce better spinning machines. In 1767 Hargreaves invented the "jenny" which spun eight threads at a time. In 1769 Arkwright invented the "waterframe," or "throstle," by means of which a much firmer yarn was produced. In 1785 Dr. Cartwright invented the "power loom," which far surpassed any previous spinning machine. Other improvements were added from time to time, culminating in our highly perfected modern machines, which would require volumes for a complete description. We have machines with thousands of spindles. It is possible to weave a thread one thousand miles or more in length, yet weighing but one pound.

The raw cotton must be subjected to various processes before it is ready for spinning. The bales are opened and the cotton sorted, so as to insure a uniform quality. It is then passed through a scutching, willowing or cleaning machine, where all impurities and undesirable foreign particles are removed. Next it is passed through a carding machine, which straightens out the fibers and lays them parallel. It also passes through the spreading machine, roving machine and finally to the spinning machine.

The finer yarns are spun from Sea Island cotton, from which fine muslins, laces, etc., are made. This cotton has long fibers. The good qualities of short cottons are used in the manufacture of cambrics, calicoes, sheetings, shirtings, etc. Inferior grades of cotton are used for coarse yarns in the manufacture of coarse fabrics. Cotton is also mixed with wool. Yorkshire broadcloth is said to be about half cotton. From warps of cotton and wefts of wool or worsted (a variety of wool) are formed Orleans cloths, Coburgs, mousselines de laine, damasks, etc. There are also fabrics composed of silk and cotton, linen and cotton, alpaca and cotton, etc. It is used in the manufacture of cotton thread for sewing and pack thread for tying bundles, and other cordage.

Description of Plate.—A, B, branch of cotton plant; 1, sepal; 2, flowering bud; 3, petal; 4, 5, stamen; 6, pollen grain; 7, pistil; 8, 8a, 9, flower; 10, 11, 12, immature fruit; 13, ripe fruit; 14, 15, seed.

ALBERT SCHNEIDER.

THE CLOUD.

I bring fresh showers for the thirsty flowers,
From the seas and the streams;
I bear light shades for the leaves when laid
In their noonday dreams.
From my wings are shaken the dews that waken
The sweet buds everyone,
When rocked to rest on their mother's breast
As she dances about in the sun.
I wield the flail of the lashing hail
And whiten the green plains under;
And then again I dissolve it in rain
And laugh as I pass in thunder.

—Shelley.

ORDER BLANK.

BIRDS AND NATURE PICTURES

In Natural Colors. Size, 7x9 inches.

PRICE. Assorted as desired, two cents each; one cent each if one or more subscribers to BIRDS AND NATURE or REVIEW OF EDUCATION are sent at the same time.

SPECIAL OFFERS. (1) 75 plates (our selection) and BIRDS AND NATURE, one year, $2.00. (2) 75 plates with REVIEW OF EDUCATION, $1.50. (3) The complete set, 504 plates, 1 cent each, $5 04. Send for catalogue for further information. Mark pictures desired and return this sheet. A. W. MUMFORD, 203 Michigan Ave., Chicago.

Date.....

I enclose.....for which please send the following order to

Name,.....

Street,.....

P. O.....

State,.....

1 Nonpareil.
2 Resplendent Trogon.
3 Mandarin Duck.
4 Golden Pheasant.
5 Australian Parrakeet.
6 Cock of the Rock.
7 Red Bird of Paradise.
8 Yellow-throated Toucan.
9 Red-rumped Tanager.
10 Golden Oriole.
11 American Blue Jay.
12 Swallow-tailed Indian Roller.
13 Red-headed Woodpecker.
14 Mexican Mot Mot.
15 King Parrot.
16 American Robin.
17 American Kingfisher.
18 Blue-mountain Lory.
19 Red-winged Blackbird.
20 Cardinal, or Red Bird.
21 Bluebird.
22 Barn Swallow.
23 Brown Thrasher.
24 Japan Pheasant.
25 Bobolink.
26 American Crow.
27 Flicker.
28 Black Tern.
29 Meadow Lark.
30 Great Horned Owl.
31 Rose-breasted Grosbeak.
32 Canada Jay.
33 Purple Gallinule.
34 Smith's Longspur.
35 American Red Crossbills.
36 California Woodpecker.
37 Pied-billed Grebe.
38 Bohemian Waxwing.
39 Long-billed Marsh Wren.
40 Arizona Jay.
41 Screech Owl.
42 Orchard Oriole.
43 Marsh Hawk.
44 Scissor-tailed Flycatcher.
45 Black-capped Chickadee.
46 Prothonotary Warbler.
47 Indigo Bird.
48 Night Hawk.
49 Wood Thrush.
50 Catbird.
51 Yellow-throated Vireo.
52 American Mockingbird.
53 Black-crowned Night Heron.
54 Ring-billed Gull.
55 Logger-head Shrike.
56 Baltimore Oriole.
57 Snowy Owl.
58 Scarlet Tanager.
59 Ruffed Grouse.
60 Black and White Creeping Warbler.
61 American Bald Eagle.
62 Ring Plover.
63 Mallard Duck.
64 American Avocet.
65 Canvas-back Duck.
66 Wood Duck.
67 Anhinga, or Snake Bird.
68 American Woodcock.
69 White-winged Scoter.
70 Snowy Heron, or Little Egret.
71 Osprey.
72 Sora Rail.
73 Kentucky Warbler.
74 Red-breasted Merganser.
75 Yellow Legs.
76 Skylark.
77 Wilson's Phalarope.
78 Evening Grosbeak.
79 Turkey Vulture.
80 Gambel's Partridge.
81 Summer Yellow Bird.
82 Hermit Thrush.
83 Song Sparrow.
84 Yellow-billed Cuckoo.
85 Ruby-throated Hummingbird.
86 House Wren.
87 Phœbe.
88 Ruby-crowned Kinglet.
89 Mourning Dove.
90 White-breasted Nuthatch.
91 Blackburnian Warbler.
92 Gold Finch.
93 Chimney Swift.
94 Horned Lark.
95 Yellow-bellied Sapsucker.
96 Warbling Vireo.
97 Wood Pewee.
98 Snow Bunting.
99 Junco.
100 Kingbird.
101 Summer Tanager.
102 White-fronted Goose.
103 Turnstone.
104 Belted Piping Plover.
105 Wild Turkey.
106 Cerulean Warbler.
107 Yellow-billed Tropic Bird.
108 European Kingfisher.
109 Vermilion Flycatcher.
110 Lazuli Bunting.
111 Mountain Bluebird.
112 English Sparrow.
113 Allen's Hummingbird.
114 Green-winged Teal.
115 Black Grouse.
116 Flamingo.
117 Verdin.
118 Bronzed Grackle.
119 Ring-necked Pheasant.
120 Yellow-breasted Chat.
121 Crowned Pigeon.
122 Red-eyed Vireo.
123 Fox Sparrow.
124 Bob-white.
125 Passenger Pigeon.
126 Short-eared Owl.
127 Rose Cockatoo.
128 Mountain Partridge.
129 Least Bittern.
130 Bald Pate Duck.
131 Purple Finch.
132 Red-bellied Woodpecker.
133 Sawwhet Owl.
134 Black Swan.
135 Snowy Plover.
136 Lesser Prairie Hen
137 Black Duck.
138 Wilson's Petrel.
139 Blue-Gray Gnatcatcher.
140 American Coot.
141 Ivory-billed Woodpecker.
142 American Sparrow Hawk.
143 Silver Pheasant.
144 Scaled Partridge.
145 Ovenbird.
146 American Three-toed Woodpecker.
147 Bartramian Sandpiper.
148 Nightingale.
149 Roseate Spoonbill.
150 Dickcissel.

151 Dusky Grouse.
152 Eggs, First Series.
153 South American Rhea.
154 Bay-breasted Warbler.
155 Black-necked Stilt.
156 Pintail Duck.
157 Double Yellow-headed Parrot.
158 Magnolia Warbler.
159 Great Blue Heron.
160 Eggs, Second Series.
161 Brunnich's Murre.
162 Canada Goose.
163 Brown Creeper.
164 Downy Woodpecker.
165 Old Squaw Duck.
166 White-faced Glossy Ibis.
167 Arkansas Kingbird.
168 Eggs, Third Series.
169 Wilson's Snipe.
170 Black Wolf.
171 Red Squirrel.
172 Prairie Hen.
173 Butterflies, First Series.
174 Gray Rabbit.
175 American Ocelot.
176 Apple Blossoms.
177 Wilson's Tern.
178 Coyote.
179 Fox Squirrel.
180 Loon.
181 Butterflies, Second Series.
182 American Red Fox.
183 Least Sandpiper.
184 Mountain Sheep.
185 American Herring Gull.
186 Raccoon.
187 Pigmy Antelope.
188 Red-shouldered Hawk.
189 Butterflies, Third Series.
190 American Gray Fox.
191 Gray Squirrel.
192 Pectoral Sandpiper.
193 King Bird of Paradise.
194 Peccary.
195 Bottle-nosed Dolphin.
196 Tufted Puffin.
197 Butterflies, Fourth Series.
198 Armadillo.
199 Red-headed Duck.
200 Golden Rod.
201 Prairie Sharp-tailed Grouse.
202 Brown and Red Bat.
203 American Otter.
204 American Golden Plover.
205 Moths.
206 Canadian Porcupine.
207 Caspian Tern.
208 Flowering Almond.
209 African Lion.
210 Cacti.
211 Flying Squirrel.
212 Hummingbirds.
213 Silkworm.
214 California Vulture.
215 American Goldeneye.
216 Skunk.
217 Chimpanzee.
218 Puma.
219 Medicinal Plant: Lemon.
220 American Mistletoe.
221 Nuts.
222 Whippoorwill
223 Snapping Turtle.
224 Sandhill Crane.
225 Medicinal Plant: Ginger.
226 Crab-eating Opossum.
227 Geographic Turtle.
228 White Ibis.
229 Iris
230 Duck-billed Platypus.
231 Cape May Warbler.
232 The Cocoanut.
233 Tufted Titmouse.
234 Northern Hare.
235 Pineapple.
236 Hooded Merganser.
237 Medicinal Plant: Cloves.
238 Common Ground Hog.
239 Common Mole.
240 Azalea.
241 Medicinal Plant: Nutmeg.
242 American Barn Owl.
243 Kangaroo.
244 Hoary Bat.
245 Nashville Warbler.
246 English Grapes.
247 Swift Fox.
248 Hyacinth.
249 Cedar Waxwing.
250 Hyrax.
251 Medicinal Plant: Coffee.
152 Bonaparte's Gull.
253 Common Baboon.
254 Grinnell's Water Thrush.
255 Hairy-tailed Mole.
256 Cineraria.
257 A Feather Changing from Green to Yellow.
258 Western Yellow-throat.
259 Myrtle Warbler.
260 Blue-winged Yellow Warbler.
261 Golden-winged Warbler.
262 Mourning Warbler.
263 Chestnut-sided Warbler.
264 Black-throated Blue Warbler.
265 Pointer Dog.
266 Shells.
267 Marbles.
268 Ores.
269 Minerals.
270 Water Lilies.
271 Yellow Perch.
272 Beetles.
273 Forests.
274 Grand Canon.
275 Terraced Rocks, Yellowstone Park.
276 Rooster and Hen.
277 Oil Well.
278 Polished Woods.
279 Brook Trout.
280 Niagara Falls.
281 Purple Ladies' Slipper.
282 Medicinal Plant; Tea.
283 Towhee.
284 Canary.
285 Carolina Paroquet.
286 Chipmunk.
287 Peach.
288 Common Minerals and Valuable Ores.
289 Narcissus.
290 Medicinal Plant: Coca.
291 Red-tailed Hawk.
292 Maryland Yellow-throat.
293 Lyre Bird.
294 Cowbird.
295 Wild Cat.
296 European Squirrel.
297 Virginia Rail.
298 Blue-winged Teal.
299 Yellow-headed Blackbird.
300 Black Squirrel.
301 Weasel (Ermine).
302 Medicinal Plant; Quince.
303 Quartz.
304 Lily of the Valley.
305 Killdeer.
306 Cinnamon Teal.
307 Clapper Rail.
308 Gopher.
309 Mink.
310 Carbons.
311 Medicinal Plant; Licorice.
312 Yellow Ladies' Slipper and Painted Cup.
313 Peacock.
314 Willow Ptarmigan.
315 Stellar's Jay.
316 Ruddy Duck.
317 Muskrat.
318 Medicinal Plant; Poppy.
319 Primrose.
320 Copper and Lead Ores.
321 American Bittern.
322 Scarlet Ibis.
323 Massena Partridge.
324 Ring-billed Duck.
325 Medicinal Plant; Thyme.
326 Bloodroot.
327 Western Blue Grosbeak.
328 Shells.
329 Magpie.
330 Red-breasted Nut-hatch.
331 Purple Martin.
332 Ring-necked Dove.
333 Opossum.
334 Genista.
335 Medicinal Plant; Digitalis.
336 Raven.
337 Wilson's Thrush.
338 Red or Wood Lily
339 Common Sunfish.
340 A Mountain River.
341 Insects.
342 Brittany (Cows).
343 Harvesting in the Great Northwest.
344 Homing Pigeon
345 Swamp Rose Mallow.
346 Yellow Ladies' Slipper.
347 New England Aster. / Late Purple Aster.
348 Wild Yellow or Canadian Lily.
349 Vesper Sparrow.
350 Calico Bass.
351 Mountain Lake.
352 Fruit: Banana.
353 Oswego Tea or Bee Balm.
354 Fringed Gentian. / Closed or Blind Gentian.
355 Tall or Giant Sunflower. / Black-eyed Susan or Oxeye Daisy.
356 Wild Columbine.
357 American Redstart.
358 Trout.
359 Ocean Waves.
360 Domestic Fowls.
361 Western Willet.
362 Buffle-Head.
363 American Eared Grebe.
364 Louisiana Tanager.
365 Luna and Polyphemus Moths
366 Prong-horned Antelope.
367 Sensitive Plant.
368 Medicinal Plant; Almond.
369 Western Horned Owl.
370 Long-crested Jay.
371 Fulvous Tree-duck.
372 Red-breasted Sapsucker.
373 Promethean and Secropian Moths.
374 Irish Setter.
375 Pitcher Plant (Nepenthes).
376 Medicinal Plant; Mandrake.
377 Hawk Owl.
378 Knot or Robin Snipe.
379 White-winged Crossbill.
380 Townsend's Warbler.
381 Water Shells.
382 Collared Lizard.
383 Fruit: Apple.
384 Medicinal Plant; Vanilla.
385 American Rough-legged and Young Red-tailed Hawks.
386 Short-billed Dowitcher.
387 Great-tailed Grackle.
388 Hooded Warbler.
389 Land Shells.
390 Gila Monster.
391 Medicinal Plant; Cassia Cinnamon.
392 Fruit: Pomegranate.
393 Owl Parrot.
394 Gray Parrot.
395 White Pelican.
396 Marbled Murrelet.
397 Black Bear.
398 Pond and River Shells.
399 Fruit: Orange.
400 Medicinal Plant; Pepper.
401 Crested Curassow.
402 Harlequin Duck.
403 Canada Grouse.
404 Dovekie.
405 Beaver.
406 Marine Shells.
407 Fruit: Lemon.
408 Medicinal Plant: Cubebs.
409 Audubon's Oriole.
410 Marbled Godwit.
411 Rusty Blackbird or Grackle.
412 Surf Scoter.
413 American Elk.
414 Nautilus Shells.
415 Flowers: Mountain Laurel. Trailing Arbutus.
416 Medicinal Plant: Hops.
417 Bullock's Oriole.
418 Sanderling.
419 Great Northern Shrike.
420 Brandt's Cormorant.
421 Buffalo.
422 Agates
423 Flowers: Great Mullein Moth Mullein.
424 Medicinal Plant: Cocoa Fruit.

425 Anna's Hummingbird
426 Rufous Hummingbird
427 White-throated Sparrow
428 Parula Warbler
429 Tourmaline
430 Indian Elephant
431 Walrus
432 Bengal Tiger
433 Yellow-bellied Flycatcher
434 Olive-sided Flycatcher
435 Tree Sparrow
436 Black-throated Green Warbler
437 Beryl
438 African Lion
439 Alaskan Moose
440 Polar Bear
441 Pine Grosbeak
442 Field Sparrow
443 Carolina Wren
444 Black-poll Warbler
445 Turquois
446 Striped Hyena
447 Giraffe
448 Miriki Spider Monkey
449 White-eyed Vireo
450 Rivoli Hummingbird
451 Worm-eating Warbler
452 Chipping Sparrow
453 Topaz
454 Rhesus Monkey
455 Asiastic or Bactrian Camel
456 Zebra
457 Golden-crowned Kinglet
458 King Rail
459 Brown-headed Nuthatch
460 Sharp-shinned Hawk
461 Quartz
462 Greenland Whale
463 Bur or Spear Thistle and Pasture or Fragrant Thistle
464 Irish Moss
465 Blue-headed Vireo
466 California Thrasher
467 Broad-tailed Hummingbird
468 Broad-winged Hawk
469 Quartz
470 Domestic Cat
471 Soapwort or Bouncing Bet and Snake-head or Turtle-head
472 Sugar Cane
473 Winter Wren
474 Lecont's Sparrow
475 Northern Phalarope
476 Hairy Woodpecker
477 Opal
478 Purple Violet and Hepatica
479 Sheep
480 English Walnut
481 Black-chined Hummingbird
482 Burrowing Owl
483 Audubon's Warbler
484 Red-backed Sandpiper
485 Garnet
486 Black Cohosh and Arrow Head
487 Cows
488 Sweet Flag

---

489 Green Heron
490 Varied Thrush
491 Short-billed Marsh Wren
492 Prairie Warbler
493 Birth Stones
494 Horse
495 Robin's Plantain and Blue Vervain
496 Medicinal Plant: Cotton
497 Swallow tailed Kite
498 Alice's Thrush
499 Carolina Chickadee
500 Violet-green Swallow
501 Starfish
502 "Old Faithful" Geyser
503 Sea or Marsh Pink and Fireweed
504 Medicinal Plant: Tobacco

A SET INCLUDING ONE OF EACH OF THE ABOVE

504 PICTURES FOR $5.04.

Order some of these Pictures for Bird Day and Arbor Day.

A. W. MUMFORD, PUBLISHER,

203 Michigan Ave., Chicago.

For the enclosed check, $6.23, kindly send me the 488 pictures of BIRDS AND NATURE, one game of Birds and the Typical Forest Trees in photogravure, three series

DR. H. A. ZIMMERMAN.

Youngstown, Ohio, March 16, 1902.

Please find enclosed money order for $5.88, for which please send me three series of Typical Forest Trees in photogravure, and also a set of the BIRDS AND NATURE pictures.

CHAS. W. WELCH.

Stoughton, Mass., March 22, 1902.

Please send me the set of 488 BIRDS AND NATURE pictures, for which you will find enclosed check for $4.88.

N. TRIPP.

Forest, Ont., April 5, 1902.

I enclose money order for $4.88, for which please send me the 488 plates of BIRDS AND NATURE.

G. S. BRIANT.

Parkersburg, W. Va., April 2, 1902.

Enclosed find check for $4.88, for which please send me the 488 BIRDS AND NATURE pictures.

SECRETARY, Board of Education.

Schenectady, New York, March 28, 1902.

You will find enclosed an express order for $4.88, for which please send me a complete set (488) of your BIRDS AND NATURE pictures.

FRED J. HART.

Barrie, Ont., March 2, 1902.

I enclose a money order for $4.88, for which please send me 488 BIRDS AND NATURE pictures.

H. HENRY JOHNSTONE.

Edinburgh, Scotland, March 5, 1902.

A WONDERFUL ADVANCE

in Bird Study and Photography is marked in

141 Original Illustrations

The... Home Life of Wild Birds

A New Method of the Study and Photography of Birds, by FRANCIS HOBART HERRICK, *of the Department of Biology, Adelbert College.*

4°. With 141 Original Illustrations from Nature by the Author . $2.50 net, by mail, $2.75

"Never before have we had placed before us in a series of illustrations from life such a revelation of the intimate daily life of birds in the nesting season as is here presented."—*New York Evening Post.*

"Nothing written has ever contained quite so much ornithological matter of this sort, and the book, typographically beautiful, is one to be treasured."—*Chicago Interior.*

FIELD BOOK OF AMERICAN WILD FLOWERS

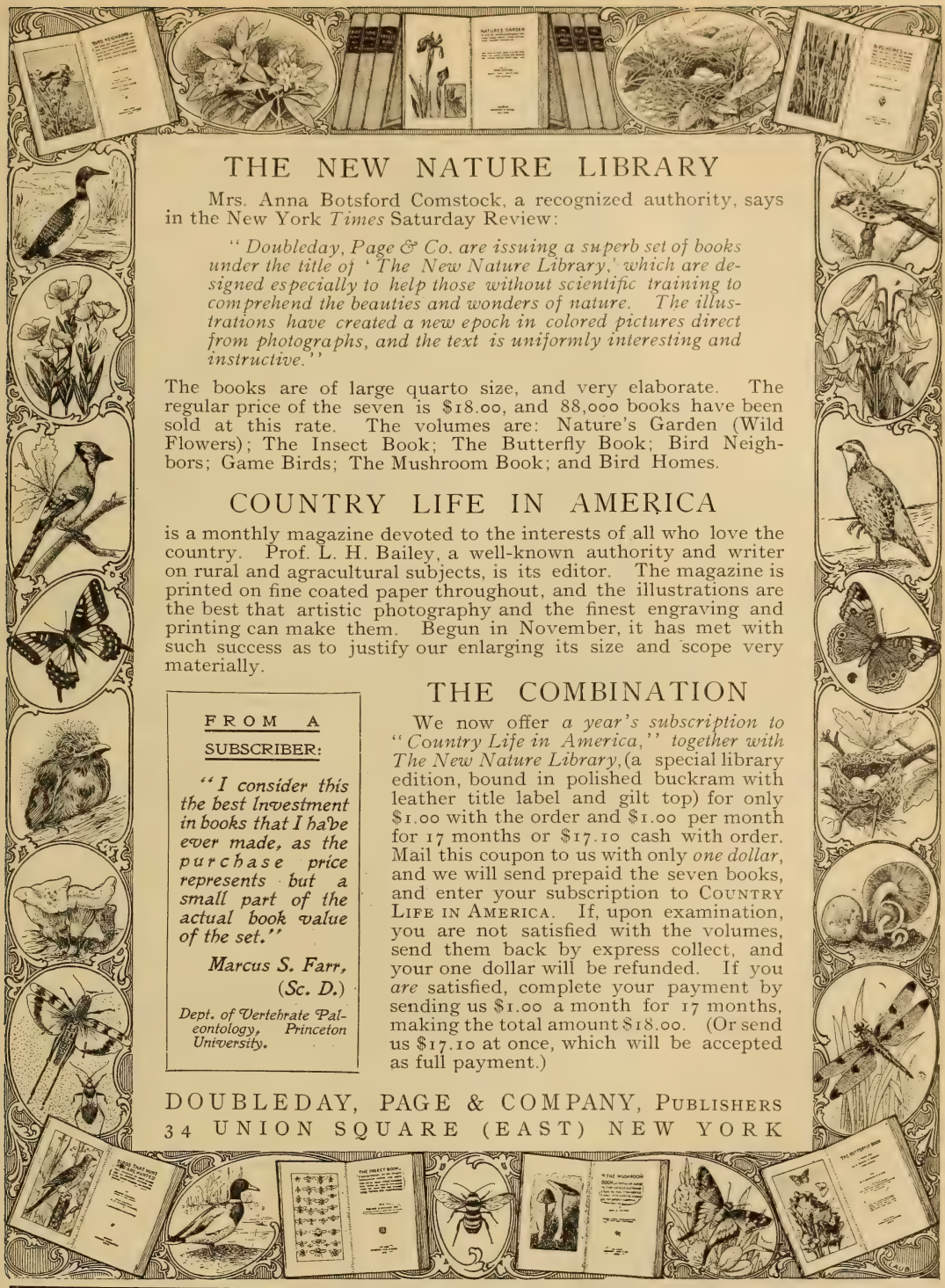
Being a short description of their character and habits, a concise definition of their colors, and incidental references to the insects which assist in their fertilization. By F. SCHUYLER MATHEWS, author of "Familiar Flowers of Field and Garden," etc.

16°, 525 pp., with 350 illustrations, including 24 colored and 200 black and white full page plates. Net, $1.75. (By mail, $1.85.) Full leather, net, $2.25.

Here at last is the long sought **POCKET BOTANY**—light, compact, durable—suited to becoming a constant companion in rambles, written by an eminent authority and furnished with illustrations which are probably the best of their kind ever printed in a book.

OUT-OF-DOOR BOOKS? Send for free illustrated catalogue of Nature and Out-of-Door Books :: :: ::

G. P. Putnam's Sons, New York and London



THE NEW NATURE LIBRARY

Mrs. Anna Botsford Comstock, a recognized authority, says in the New York *Times* Saturday Review:

> *"Doubleday, Page & Co. are issuing a superb set of books under the title of 'The New Nature Library,' which are designed especially to help those without scientific training to comprehend the beauties and wonders of nature. The illustrations have created a new epoch in colored pictures direct from photographs, and the text is uniformly interesting and instructive."*

The books are of large quarto size, and very elaborate. The regular price of the seven is $18.00, and 88,000 books have been sold at this rate. The volumes are: Nature's Garden (Wild Flowers); The Insect Book; The Butterfly Book; Bird Neighbors; Game Birds; The Mushroom Book; and Bird Homes.

COUNTRY LIFE IN AMERICA

is a monthly magazine devoted to the interests of all who love the country. Prof. L. H. Bailey, a well-known authority and writer on rural and agracultural subjects, is its editor. The magazine is printed on fine coated paper throughout, and the illustrations are the best that artistic photography and the finest engraving and printing can make them. Begun in November, it has met with such success as to justify our enlarging its size and scope very materially.

FROM A SUBSCRIBER:

"I consider this the best investment in books that I have ever made, as the purchase price represents but a small part of the actual book value of the set."

Marcus S. Farr,
(Sc. D.)

Dept. of Vertebrate Paleontology, Princeton University.

THE COMBINATION

We now offer *a year's subscription to "Country Life in America," together with The New Nature Library,* (a special library edition, bound in polished buckram with leather title label and gilt top) for only $1.00 with the order and $1.00 per month for 17 months or $17.10 cash with order. Mail this coupon to us with only *one dollar*, and we will send prepaid the seven books, and enter your subscription to COUNTRY LIFE IN AMERICA. If, upon examination, you are not satisfied with the volumes, send them back by express collect, and your one dollar will be refunded. If you *are* satisfied, complete your payment by sending us $1.00 a month for 17 months, making the total amount $18.00. (Or send us $17.10 at once, which will be accepted as full payment.)

DOUBLEDAY, PAGE & COMPANY, PUBLISHERS
34 UNION SQUARE (EAST) NEW YORK

I accept your special offer of The New Nature Library, and "Country Life in America" for one year, for $18.00. Enclosed find $1.00 for first payment.

NAME.....

Birds & N., 502. ADDRESS.....

Cut out and mail to us With $1.00.

OF BIRDS AND NATURE, $1.50.

I enclose New York draft for $7.20 in payment of six copies of BIRDS AND NATURE, to be sent to our Library for one year.

JAS. W. McLANE.

Lincoln High School, Cleveland, O., Mar. 24, 1902.

My children have a complete set of BIRDS AND NATURE and thoroughly enjoy the books. I ordered the 488 pictures so that they might have them to arrange and classify. They find them an unending source of amusement and instruction.

EDMUND D. BARRY.

Grand Rapids, Mich., Mar. 26, 1902.

I think your BIRDS AND NATURE is the best thing of the kind I have ever seen. Enclosed please find Money Order for $17.50 for which please send me the five double volumes BIRDS AND NATURE, 500 Birds and Nature pictures, the three series of Forest Trees, and also credit my subscription for 1902 and send the 75 assorted pictures.

JNO. JOUEY.

New Orleans, La., Mar. 25, 1902.

Handsomely Designed China Table Ware, Decorations Blue, Brown, Pink, Green or Gold—Mention Choice. Guaranteed Full Size for Family Use.

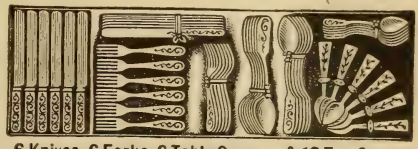
56 PIECES

BREAKFAST SETS, DINNER SETS, - - TEA SETS, - - - -

FREE!

Watch Warranted for 20 Yrs.

We give you a **56 PIECE BREAKFAST, DINNER,** or **TEA-SET**—full size for family use—**FREE OF COST.** Here is your opportunity. Do not miss it. This means exactly what it says. We give the Sets away **ABSOLUTELY** free. There is no fraud or humbug in this announcement. There is no juggling of words, no misrepresentation, no deception, no misunderstanding, no manipulation of words or phrases intended to deceive or befuddle you. All is plain, open, above board, and understandable. We will do what we say and give what we agree. When we state **WE GIVE A 56 PIECE SET,** we do not mean that we will send an OFFER or proposition, a plan used by others so often to entrap and deceive, but **WE GUARANTEE** to forward **the real genuine goods themselves.** Choice given of a Breakfast, Dinner, or Tea Set—each set consisting of 56 Pieces, beautifully decorated and artistically designed. In addition to the 56 Piece Sets, every person gets an elegant Watch warranted for 20 years, or 12 Silver Plated Tea Spoons, 6 Table Knives, 6 Table Forks, 6 Table Spoons, a pair of ladies' or gents' Kid-Gloves, or a box of one dozen handsome Stockings. (Gloves and Stockings for ladies or gents—all sizes and colors.)



6 Knives, 6 Forks, 6 Table Spoons, & 12 Tea Spoons

REASONS FOR LIBERALITY.

We manufacture the celebrated family and household remedy for men, women, and children—BLOOD GLOBULES, a specific for all blood diseases, nervous disorders, sluggish circulation, impaired vitality, rheumatism, female complaints, liver, kidney, and stomach troubles. We guarantee it to be the best remedy on earth for these diseases. We wish to introduce "BLOOD GLOBULES" in thousands of homes where it has never been used, and have set aside

$25,000 CASH TO BE SPENT

in giving away valuable and useful presents to those who are willing to help us.

On request we will send you 7 boxes of Blood Globules, all charges paid, which are to be sold at 25 cents per box, remit the $1.75 collected and we will present you with a 56 Piece Breakfast, Dinner, or Tea Set, and in addition we will immediately send you, all charges paid, a Watch, or 12 Silver-Plated Tea Spoons, 6 Table Knives, 6 Table Forks, 6 Table Spoons, a box of one dozen Stockings (ladies' or gents'), or a pair of ladies' or gents' Kid Gloves.

☞Remember **YOU HAVE ONLY SEVEN BOXES OF BLOOD GLOBULES TO SELL—no more.**

THE ONLY CONDITION. MARK IT WELL.

This is one of the most sensational strokes of advertising ever launched and we will carry it out, as our reputation depends upon the fulfillment of every promise made. In these days of active competition in business enterprises, it is necessary to do something startling to outstrip one's rivals, and that is just what we intend to do. Of course a large amount of cash and nerve are required to enable anyone to take the lead. We have both Nerve and Cash and are ready to give a share of the **CASH TO YOU** in presents. We guarantee satisfaction to all who do business with us.

Address: **BLOOD GLOBULE COMPANY, NEW YORK CITY, N. Y.**

NO MONEY.

☞Remember you need not pay a **Penny** in advance. Only send your full name and post-office address with nearest **Express** and **Freight Depot.** We box, pack, and deliver the Sets **FREE OF ALL EXPENSE** to Express or Freight Depot and we further guarantee against breakage or damage in any form.

WRITE YOUR ORDER ON THIS FORM. CUT IT OUT AND SEND IT TO

BLOOD GLOBULE CO., New York. Cut from May Chicago BIRDS AND NATURE.

PLEASE SEND ME 7 BOXES OF BLOOD GLOBULES, WHICH I WILL SELL AT 25 CENTS A BOX, AND I AGREE TO REMIT THE $1.75 WHEN SOLD. FORWARD ME THE PRESENTS SELECTED BELOW.

Name.....Town.....State.....

County.....Street and No.....

Express Office.....Freight Office.....

Do you want a Breakfast, Dinner, or Tea Set? ..... What additional Premium do you want? .....

☞If you do not wish to cut this paper then make a copy of this coupon and send us your written order.

VERY, VERY SPECIAL!

A desire to round out our first year with a large increase in subscriptions prompts us to offer the April, May and June numbers of

THE APPLIED ARTS BOOK

GRATIS to all new subscribers sending One Dollar, on or before June 15, as subscription to THE APPLIED ARTS BOOK, Volume II, which begins with the September number. The Applied Arts Guild is also publishing from time to time things to serve those who teach drawing in schools. Subscribers to THE APPLIED ARTS BOOK (Guildsmen) are entitled to ten per cent discount on these publications.

THE APPLIED ARTS BOOK stands alone as the Servant of Those who teach Drawing and Allied Topics in Schools. From cover to cover it is unique, helpful and inspiring. It is fully illustrated and its contributors are those prominent in the art educational work of the country; those who write from Experience; The Great Teacher.

Single Copies, Seven two-cent stamps; One Dollar a Year.

MENTION THIS MAGAZINE WHEN TAKING ADVANTAGE OF THIS SPECIAL OFFER.

The Applied Arts Guild, Publishers

WORCESTER, MASSACHUSETTS.

Vol. XI. JANUARY, 1902. No. 1.

The beautiful is as useful as the useful.—*Victor Hugo.*

BIRDS AND NATURE

CONTENTS.

	Page.
A SONG FOR THE NEW YEAR'S EVE (William Cullen Bryant) [Poem]	1
THE GOLDEN-CROWNED KINGLET [Illustration]	2
THE TALKING PINE TREE (Loveday Almira Nelson)	5
THE KING RAIL [Illustration]	11
BETWEEN THE DAYLIGHT AND THE DARK (S. E. McKee)	12
TO A NUTHATCH (Edith Thomas) [Poem]	13
THE BROWN-HEADED NUTHATCH [Illustration]	14
MY RED-HEADED NEIGHBORS (William Harrison Lewis)	17
BEAUTIFUL SNOW (J. Frank Richman) [Poem]	20
THE SHARP-SHINNED HAWK [Illustration]	23
BIRDS ON THE WING (M. D. Tolman)	24
A SUNSET CLUB (Anne Wakely Jackson)	25
QUARTZ (Oliver Cummings Farrington) [Illustration]	26
EVENING IN THE CANYON (M. E. Dissette) [Poem]	30
BERRIES IN THE WOODS (Ella F. Mosby)	31
EARLY RECOLLECTIONS OF NATURAL OBJECTS (Berton Mercer)	32
TWO STRANGE HOMES (Mary McCrae Culter)	32
THE GREENLAND WHALE (John Ainslie) [Illustration]	35
THE THISTLE (Charles S. Raddin) [Illustration]	38
WITH SILVER CHAINS AND GAY ATTIRE (George Bancroft Griffith) [Poem]	42
THE BIRDS IN THEIR WINTER HOMES (James Stephen Compton)	43
IRISH MOSS (Albert Schneider) [Illustration]	47
THE CARDINAL FLOWER (Belle A. Hitchcock) [Poem]	48

EDITED BY WILLIAM KERR HIGLEY.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

203 Michigan Avenue, Chicago, Ill.

A. W. MUMFORD, PUBLISHER.

$1.50 a Year. 15 Cts. a Copy.

Copyright 1902 by A. W. Mumford.

Entered at Chicago Post Office as second-class matter.

BIRDS AND NATURE.

MONTHLY, EXCEPT JULY AND AUGUST.

TERMS AND CONDITIONS OF PUBLICATION:

PRICE. Subscription price is one dollar and fifty cents a year, payable in advance, with 75 assorted pictures, $2.00; single copy, 15 cents.

POSTAGE IS PREPAID by the publisher for all subscriptions in the United States, Canada and Mexico. For all other countries in the Postal Union, add 30 cents for postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old address must be given. Postmasters are not allowed to forward second class matter until postage is sent to prepay charges. It costs two cents per copy to forward this magazine. Subscribers who do not observe this rule should not ask us to send duplicate copies.

DISCONTINUANCES. If a subscriber wishes his magazine discontinued at the expiration of his subscription, notice to that effect should be sent, otherwise it is assumed that a continuance of the subscription is desired.

HOW TO REMIT. Remittances should be sent by check, draft, express order, or money order, payable to order of A. W. Mumford. Cash should be sent in registered letter.

AGENTS. We want an energetic, courteous agent in every town and county. Write for terms and territory.

RECEIPTS. Remittances are acknowledged by change of label on wrapper, indicating date to which subscription is paid.

MAGAZINES from 1897, $1.50 a year; single numbers, 15 cents.

BOUND VOLUMES, I to IX, each 8vo, 244 pages, from 40 to 60 colored pictures, 8x10 in, cloth, $1.50. Double volumes, half morocco, $3.00. Nine single volumes, cloth, $9.00. Four double volumes, half morocco, $8.00.

Exchange price for bound volumes when magazines are returned: Single volumes, cloth, 75 cents. Combined volumes, half morocco, $1.50.

COLORED PICTURES, in monthly sets of ten, for 1897, each set 15 cents, or 12 sets $1.50. For 1898, each monthly set of eight, 12 cents, or 12 sets for $1.10. For 1899 and other years, monthly sets of eight, 12 cents, or entire year's collection, 10 months, $1.00. Pictures assorted as desired, 2 cents each; to subscribers only 1 cent each. No order received for less than 20 pictures. The 424 pictures, $4.24.

Twenty percent discount to subscribers on bound volumes and magazines.

PREMIUMS. Either of the following colored pictures sent free with subscriptions: Song of the Lark, 18x21; Gladstone, 18x24; The Golden Pheasant, 18x24; Birth of the American Flag, 12x18; or Twenty Pictures from magazine.

All letters should be addressed to A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago.

TO THE READER OF THIS MAGAZINE • • •

Ten volumes of BIRDS AND NATURE were completed with the December 1901, number. These volumes contained illustrations of Birds, Birds' Eggs, Flowers, Mammals, Fish, Insects, Fruits, Shells, Minerals and gems; and the text contained several valuable articles from the pens of well-known writers and educators. We shall continue to have BIRDS made the chief attraction, and at least four bird-plates will appear in each number. We shall continue in Volume XI the publication of the series of illustrations of gems begun with Volume X. The articles will be written by Dr. Oliver Cummings Farrington.

Among the color illustrations of future numbers the following may be mentioned:

FEBRUARY, 1902.

Broad-tailed Hummingbird.
Blue-headed Vireo.
California Thrasher.
Broad-winged Hawk.
Quartz.
Flowers { Soapwort or Bouncing Bet. / Snake-head or Turtle-head.
Domestic Cat.
Medicinal Plant: Sugar Cane.

MARCH, 1902.

Winter Wren.
Lecont's Sparrow.
Northern Phalarope.
Hairy Woodpecker.
Opal.
Flowers { Purple Violet. / Hepatica.
Sheep.
Medicinal Plant: English Walnut.

APRIL, 1902.

Black-chined Hummingbird.
Burrowing Owl.
Audubon's Warbler.
Rep-backed Sandpiper.
Garnet.
Flowers { Black Cohosh. / Arrow Head.
Cows.
Medicinal Plant: Sweet Flag.

The preparation of the birds and other animals for photographing in colors will be under the direction of Mr. Frank M. Woodruff, of The Chicago Academy of Sciences. Mr. Woodruff will also assist the Editor in the selection of subjects.

During the publication of the ten volumes of BIRDS AND NATURE the following 456 colored plates have appeared:

281 Birds.
62 Mammals.
30 Flowers.
19 Medicinal Plants.
11 Fruits and Nuts (20 species).
10 Insects (75 varieties.)
10 Landscapes.
7 Minerals and Ores (48 varieties).
5 Gems.
7 Shells (74 species).
5 Fishes.
4 Reptiles (Turtles and Lizards) (4 species).
3 Birds' Eggs (49 species).
1 Polished Wood Sections (6 varieties).
1 Showing Change of Color in Birds' Feathers.

A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago

Vol. XI. FEBRUARY, 1902. No. 2.

The beautiful is as useful as the useful.—*Victor Hugo.*

BIRDS AND NATURE

CONTENTS.

	Page.
FEBRUARY (William Cullen Bryant) [Poem]	49
THE BLUE-HEADED VIREO [Illustration]	50
BOOK AND MRS. OYSTER (Loveday Almira Nelson)	53
THE CALIFORNIA THRASHER [Illustration]	59
WINTER'S SECRET (Mary Noland) [Poem]	60
A QUEER PARTNERSHIP (D. Welby)	61
THE BROAD-TAILED HUMMINGBIRD [Illustration]	62
A BIRD THAT HUNG HIMSELF (Mary McCrae Culter)	65
WINTER MEMORIES (Alberta A. Field) [Poem]	66
SOME OF OUR WINTER BIRDS (Winthrop Smith)	67
THE BROAD-WINGED HAWK [Illustration]	71
THE BIRD'S COMPLAINT (Henry Johnstone) [Poem]	72
CALIFORNIA POPPIES (Clara Hill)	73
QUARTZ (Oliver Cummings Farrington) [Illustration]	74
MIDWINTER (Hattie Whitney) [Poem]	79
A CATASTROPHE IN HIGH LIFE (M. Leila Dawson)	80
THE DOMESTIC CAT (John Ainslie)	83
CUBBY (Mary Morrison) [Poem]	85
SOAPWORT OR BOUNCING BET [Illustration]	86
TURTLE-HEAD OR SNAKE-HEAD [Illustration]	86
THE POCKET BIRD (Belle Paxson Drury)	89
THE BIRDS IN THEIR WINTER HOMES (James Stephen Compton)	90
MUSIC LOVING FELINES (S. Virginia Levis)	92
SUGAR-CANE (Albert Schneider) [Illustration]	95
DEATH OF THE FOREST MONARCH (George W. H. Phillips, Jr.) [Poem]	96

EDITED BY WILLIAM KERR HIGLEY.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

National Museum

203 Michigan Avenue, Chicago, Ill.

A. W. MUMFORD, PUBLISHER.

$1.50 a Year. 15 Cts. a Copy.

BIRDS AND NATURE.

MONTHLY, EXCEPT JULY AND AUGUST.

TERMS AND CONDITIONS OF PUBLICATION:

PRICE. Subscription price is one dollar and fifty cents a year, payable in advance, with 76 assorted pictures, $2.00; single copy, 15 cents.

POSTAGE IS PREPAID by the publisher for all subscriptions in the United States, Canada and Mexico. For all other countries in the Postal Union, add 30 cents for postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old address must be given. Postmasters are not allowed to forward second class matter until postage is sent to prepay charges. It costs two cents per copy to forward this magazine. Subscribers who do not observe this rule should not ask us to send duplicate copies.

DISCONTINUANCES. If a subscriber wishes his magazine discontinued at the expiration of his subscription, notice to that effect should be sent, otherwise it is assumed that a continuance of the subscription is desired.

HOW TO REMIT. Remittances should be sent by check, draft, express order, or money order, payable to order of A. W. Mumford. Cash should be sent in registered letter.

AGENTS. We want an energetic, courteous agent in every town and county. Write for terms and territory.

RECEIPTS. Remittances are acknowledged by change of label on wrapper, indicating date to which subscription is paid.

MAGAZINES from 1897, $1.50 a year; single numbers, 15 cents.

BOUND VOLUMES, I to IX, each 8vo, 344 pages, from 40 to 60 colored pictures, 8x10 in, cloth, $1.50. Double volumes, half morocco, $3.00. Nine single volumes, cloth, $9.00. Four double volumes, half morocco, $8.00.

Exchange price for bound volumes when magazines are returned: Single volumes, cloth, 75 cents. Combined volumes, half morocco, $1.50.

COLORED PICTURES, in monthly sets of ten, for 1897, each set 15 cents, or 12 sets $1.50. For 1898, each monthly set of eight, 12 cents, or 12 sets for $1.10. For 1899 and other years, monthly sets of eight, 12 cents, or entire year's collection, 10 months, $1.00. Pictures assorted as desired, 2 cents each; to subscribers only 1 cent each. No order received for less than 20 pictures. The 424 pictures, $4.24.

Twenty percent discount to subscribers on bound volumes and magazines.

PREMIUMS. Either of the following colored pictures sent free with subscriptions: Song of the Lark, 18x21; Gladstone, 18x24; The Golden Pheasant, 18x24; Birth of the American Flag, 12x18; or Twenty Pictures from magazine.

All letters should be addressed to A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago.

TO THE READER OF THIS MAGAZINE • • •

Ten volumes of BIRDS AND NATURE were completed with the December 1901, number. These volumes contained illustrations of Birds, Birds' Eggs, Flowers, Mammals, Fish, Insects, Fruits, Shells, Minerals and gems; and the text contained several valuable articles from the pens of well-known writers and educators. We shall continue to have BIRDS made the chief attraction, and at least four bird-plates will appear in each number. We shall continue in Volume XI the publication of the series of illustrations of gems begun with Volume X. The articles will be written by Dr. Oliver Cummings Farrington.

Among the color illustrations of future numbers the following may be mentioned:

MARCH, 1902.

Winter Wren.
Lecont's Sparrow.
Northern Phalarope.
Hairy Woodpecker.
Opal.
Flowers { Purple Violet. / Hepatica.
Sheep.
Medicinal Plant: English Walnut.

APRIL, 1902.

Black-chined Hummingbird.
Burrowing Owl.
Audubon's Warbler.
Red-backed Sandpiper.
Garnet.
Flowers { Black Cohosh. / Arrow Head.
Cows.
Medicinal Plant: Sweet Flag.

The preparation of the birds and other animals for photographing in colors will be under the direction of Mr. Frank M. Woodruff, of The Chicago Academy of Sciences. Mr. Woodruff will also assist the Editor in the selection of subjects.

During the publication of the ten volumes of BIRDS AND NATURE the following 456 colored plates have appeared:

281 Birds.
62 Mammals.
30 Flowers.
19 Medicinal Plants.
11 Fruits and Nuts (20 species).
10 Insects (75 varieties.)
10 Landscapes.
7 Minerals and Ores (48 varieties).
5 Gems.
7 Shells (74 species).
5 Fishes.
4 Reptiles (Turtles and Lizards) (4 species).
3 Birds' Eggs (49 species).
1 Polished Wood Sections (6 varieties).
1 Showing Change of Color in Birds' Feathers.

A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago

Vol. XI. MARCH, 1902. No. 3.

The beautiful is as useful as the useful.—*Victor Hugo.*

BIRDS AND NATURE

CONTENTS.

	Page.
EASTER CAROL (Anna M. Pratt) [Poem]	97
SPRING (G. Cooper) [Poem]	97
THE WINTER WREN [Illustration]	98
VOICES IN THE GARDEN (M. Alice Spradlin)	101
THE LECONTE'S SPARROW [Illustration]	107
EASTER LILIES (Claudia May Ferrin)	108
THE CALL OF THE KILLDEE (Mary Morrison) [Poem]	109
THE NORTHERN PHALAROPE [Illustration]	110
OUR LITTLE MARTYRS (George Klingle) [Poem]	113
A CARGO OF STOWAWAYS (Alberta A. Field)	114
THE HAIRY WOODPECKER [Illustration]	119
A VARICOLORED FROG (Andrew James Miller)	120
WAS IT REASON OR INSTINCT? (L. P. Venen)	121
OPAL (Oliver Cummings Farrington) [Illustration]	122
THE CROCUS (Madeline S. Bridges) [Poem]	127
MARCH [Poem]	128
THE DOMESTIC SHEEP (John Ainslie) [Illustration]	131
THE BEAUTY OF A STORM (Anne Wakely Jackson)	133
THE VIOLET (Charles S. Raddin) [Illustration]	134
THE ROUND-LOBED LIVERWORT [Illustration]	137
THE SPRING MIGRATION—THE WARBLERS (James Stephen Compton)	138
A PET SQUIRREL (Loveday Almira Nelson)	140
THE ENGLISH WALNUT AND RELATED TREES (Albert Schneider) [Illustration]	143
AWAKENING (M. Townshend Maltby) [Poem]	144

EDITED BY WILLIAM KERR HIGLEY.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

203 Michigan Avenue, Chicago, Ill.

A. W. MUMFORD, PUBLISHER.

$1.50 a Year. 15 Cts. a Copy.

Copyright 1902 by A. W. Mumford.

Entered at Chicago Post Office as second-class matter.

BIRDS AND NATURE.

MONTHLY, EXCEPT JULY AND AUGUST.

TERMS AND CONDITIONS OF PUBLICATION:

PRICE. Subscription price is one dollar and fifty cents a year, payable in advance, with 75 assorted pictures, $2.00; single copy, 15 cents.

POSTAGE IS PREPAID by the publisher for all subscriptions in the United States, Canada and Mexico. For all other countries in the Postal Union, add 30 cents for postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old address must be given. Postmasters are not allowed to forward second class matter until postage is sent to prepay charges. It costs two cents per copy to forward this magazine. Subscribers who do not observe this rule should not ask us to send duplicate copies.

DISCONTINUANCES. If a subscriber wishes his magazine discontinued at the expiration of his subscription, notice to that effect should be sent, otherwise it is assumed that a continuance of the subscription is desired.

HOW TO REMIT. Remittances should be sent by check, draft, express order, or money order, payable to order of A. W. Mumford. Cash should be sent in registered letter.

AGENTS. We want an energetic, courteous agent in every town and county. Write for terms and territory.

RECEIPTS. Remittances are acknowledged by change of label on wrapper, indicating date to which subscription is paid.

MAGAZINES from 1897, $1.50 a year; single numbers, 15 cents.

BOUND VOLUMES, I to IX, each 8vo, 244 pages, from 40 to 60 colored pictures, 8x10 in, cloth, $1.50. Double volumes, half morocco, $3.00. Nine single volumes, cloth, $9.00. Four double volumes, half morocco, $8.00.

Exchange price for bound volumes when magazines are returned: Single volumes, cloth, 75 cents. Combined volumes, half morocco, $1.50.

COLORED PICTURES, in monthly sets of ten, for 1897, each set 15 cents, or 12 sets $1.50. For 1898, each monthly set of eight, 12 cents, or 12 sets for $1.10. For 1899 and other years, monthly sets of eight, 12 cents, or entire year's collection, 10 months, $1.00. Pictures assorted as desired, 2 cents each; to subscribers only 1 cent each. No order received for less than 20 pictures. The 424 pictures, $4.24.

Twenty percent discount to subscribers on bound volumes and magazines.

PREMIUMS. Either of the following colored pictures sent free with subscriptions: Song of the Lark, 18x21; Gladstone, 18x24; The Golden Pheasant, 18x24; Birth of the American Flag, 12x18; or Twenty Pictures from magazine.

All letters should be addressed to A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago.

TO THE READER OF THIS MAGAZINE • • •

Ten volumes of BIRDS AND NATURE were completed with the December 1901, number. These volumes contained illustrations of Birds, Birds' Eggs, Flowers, Mammals, Fish, Insects, Fruits, Shells, Minerals and gems; and the text contained several valuable articles from the pens of well-known writers and educators. We shall continue to have BIRDS made the chief attraction, and at least four bird-plates will appear in each number. We shall continue in Volume XI the publication of the series of illustrations of gems begun with Volume X. The articles will be written by Dr. Oliver Cummings Farrington.

Among the color illustrations of future numbers the following may be mentioned:

APRIL, 1902.	MAY, 1902.	JUNE, 1902.
Black-chinned Hummingbird.	Green Heron.	Swallow-tailed Kite.
Burrowing Owl.	Varied Thrush.	Alice's Thrush.
Audubon's Warbler.	Short-billed Marsh Wren.	Carolina Chickadee.
Red-backed Sandpiper.	Prairie Warbler.	Violet-green Swallow.
Garnet.	Horse.	Starfish.
Flowers { Black Cohosh. Arrow Head.	Flowers { Robin's Plantain. Blue Vervain.	Flowers { Sea or Marsh Pink. Fire-weed.
Medicinal Plant: Sweet Flag.	Medicinal Plant: Cotton.	Medicinal Plant: Tobacco.

The preparation of the birds and other animals for photographing in colors will be under the direction of Mr. Frank M. Woodruff, of The Chicago Academy of Sciences. Mr. Woodruff will also assist the Editor in the selection of subjects.

During the publication of the ten volumes of BIRDS AND NATURE the following 456 colored plates have appeared:

281 Birds.
62 Mammals.
30 Flowers.
19 Medicinal Plants.
11 Fruits and Nuts (20 species).
10 Insects (75 varieties.)
10 Landscapes.
7 Minerals and Ores (48 varieties).
5 Gems.
7 Shells (74 species).
5 Fishes.
4 Reptiles (Turtles and Lizards) (4 species).
3 Birds' Eggs (49 species).
1 Polished Wood Sections (6 varieties).
1 Showing Change of Color in Birds' Feathers.

A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago

BIRDS AND NATURE

CONTENTS.

	Page.
WHAT TIME O' YEAR? (Eliza Woodworth) [Poem]	145
APRIL (Walter Thornbury) [Poem]	145
THE BLACK-CHINNED HUMMINGBIRD [Illustration]	146
THE AUTOBIOGRAPHY OF AN ANTELOPE (Alice Moss Joyner)	149
THE BURROWING OWL [Illustration]	155
LONGING (Frank Monroe Beverly) [Poem]	156
THE WESTERN PINE SQUIRREL (J. Mayne Baltimore)	157
THE AUDUBON'S WARBLER [Illustration]	158
THE SING-AWAY BIRD (Lucy Larcom) [Poem]	158
SPRING NOTES FROM FEATHERED THROATS (B. F. W. Thorpe)	161
THE SPIRIT OF SPRING (Anne Wakely Jackson)	163
FROM AN ORNITHOLOGIST'S NOTE BOOK (Ella F. Mosby)	164
THE RED-BACKED SANDPIPER [Illustration]	167
A PANSY OF HARTWELL (Laura Cravens)	168
GARNET (Oliver Cummings Farrington) [Illustration]	170
ANIMAL EMOTIONS (Alberta A. Field)	175
DOMESTIC CATTLE (John Ainslie) [Illustration]	179
THE ARROW HEAD [Illustration]	182
THE BLACK COHOSH [Illustration]	182
THE VEERIE (Isabella T. M. Blake) [Poem]	185
THE SPRING MIGRATION—IN CENTRAL MISSISSIPPI (James Stephen Compton)	186
ANTICS OF A HUMMINGBIRD (George Bancroft Griffith)	188
CALAMUS (Albert Schneider) [Illustration]	191
THE BIRDS (Elizabeth Grinnell) [Poem]	192

EDITED BY WILLIAM KERR HIGLEY.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

203 Michigan Avenue, Chicago, Ill.

A. W. MUMFORD, PUBLISHER.

$1.50 a Year. 15 Cts. a Copy.

Copyright 1902 by A. W. Mumford.

Entered at Chicago Post Office as second-class matter.

BIRDS AND NATURE.

MONTHLY, EXCEPT JULY AND AUGUST.

TERMS AND CONDITIONS OF PUBLICATION:

PRICE. Subscription price is one dollar and fifty cents a year, payable in advance, with 75 assorted pictures, $2.00; single copy, 15 cents.

POSTAGE IS PREPAID by the publisher for all subscriptions in the United States, Canada and Mexico. For all other countries in the Postal Union, add 30 cents for postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old address must be given. Postmasters are not allowed to forward second class matter until postage is sent to prepay charges. It costs two cents per copy to forward this magazine. Subscribers who do not observe this rule should not ask us to send duplicate copies.

DISCONTINUANCES. If a subscriber wishes his magazine discontinued at the expiration of his subscription, notice to that effect should be sent, otherwise it is assumed that a continuance of the subscription is desired.

HOW TO REMIT. Remittances should be sent by check, draft, express order, or money order, payable to order of A. W. Mumford. Cash should be sent in registered letter.

AGENTS. We want an energetic, courteous agent in every town and county. Write for terms and territory.

RECEIPTS. Remittances are acknowledged by change of label on wrapper, indicating date to which subscription is paid.

MAGAZINES from 1897, $1.50 a year; single numbers, 15 cents.

BOUND VOLUMES, I to IX, each 8vo, 244 pages, from 40 to 60 colored pictures, 8x10 in, cloth, $1.50. Double volumes, half morocco, $3.00. Nine single volumes, cloth, $9.00. Four double volumes, half morocco, $8.00.

Exchange price for bound volumes when magazines are returned: Single volumes, cloth, 75 cents. Combined volumes, half morocco, $1.50.

COLORED PICTURES, in monthly sets of ten, for 1897, each set 15 cents, or 12 sets $1.50. For 1898, each monthly set of eight, 12 cents, or 12 sets for $1.10. For 1899 and other years, monthly sets of eight, 12 cents, or entire year's collection, 10 months, $1.00. Pictures assorted as desired, 2 cents each; to subscribers only 1 cent each. No order received for less than 20 pictures. The 424 pictures, $4.24.

Twenty percent discount to subscribers on bound volumes and magazines.

PREMIUMS. Either of the following colored pictures sent free with subscriptions: Song of the Lark, 18x21; Gladstone, 18x24; The Golden Pheasant, 18x24; Birth of the American Flag, 12x18; or Twenty Pictures from magazine.

All letters should be addressed to A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago.

TO THE READER OF THIS MAGAZINE • • •

Ten volumes of BIRDS AND NATURE were completed with the December 1901, number. These volumes contained illustrations of Birds, Birds' Eggs, Flowers, Mammals, Fish, Insects, Fruits, Shells, Minerals and gems; and the text contained several valuable articles from the pens of well-known writers and educators. We shall continue to have BIRDS made the chief attraction, and at least four bird-plates will appear in each number. We shall continue in Volume XI the publication of the series of illustrations of gems begun with Volume X. The articles will be written by Dr. Oliver Cummings Farrington.

Among the color illustrations of future numbers the following may be mentioned:

MAY, 1902.	JUNE, 1902.
Green Heron.	Swallow-tailed Kite.
Varied Thrush.	Alice's Thrush.
Short-billed Marsh Wren.	Carolina Chickadee.
Prairie Warbler.	Violet-green Swallow.
Birth Stones.	Old Faithful Geyser.
Horse.	Starfish.
Flowers { Robin's Plantain. Blue Vervain.	Flowers { Sea or Marsh Pink. Fire-weed.
Medicinal Plant: Cotton.	Medicinal Plant: Tobacco.

The preparation of the birds and other animals for photographing in colors will be under the direction of Mr. Frank M. Woodruff, of The Chicago Academy of Sciences. Mr. Woodruff will also assist the Editor in the selection of subjects.

During the publication of the ten volumes of BIRDS AND NATURE the following 456 colored plates have appeared:

281 Birds.
62 Mammals.
30 Flowers.
19 Medicinal Plants.
11 Fruits and Nuts (20 species).
10 Insects (75 varieties.)
10 Landscapes.
7 Minerals and Ores (48 varieties).
5 Gems.
7 Shells (74 species).
5 Fishes.
4 Reptiles (Turtles and Lizards) (4 species).
3 Birds' Eggs (49 species).
1 Polished Wood Sections (6 varieties).
1 Showing Change of Color in Birds' Feathers.

A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago

Vol. XI. MAY, 1902. No. 5.

The beautiful is as useful as the useful.—*Victor Hugo.*

BIRDS AND NATURE

CONTENTS.

	Page
"HARK, HARK, THE LARK!" (Edward O. Jackson) [Poem]	193
THE LITTLE GREEN HERON (Henry H. Lane) [Illustration]	194
THE HAND THAT STRUCK THEE DOWN (J. D. La Barre Van Schoonhoven) [Poem]	197
THE GOBLER WHO WAS LONESOME (Mary Catherine Judd)	198
THE VARIED THRUSH [Illustration]	201
MISSOURI SKYLARK (Juliette A. Owen)	202
THE MASTER'S PROTEST (Hildane Harrington) [Poem]	203
THE SHORT-BILLED MARSH WREN (J. Rollin Slonaker) [Illustration]	204
TWAIN LOVES OF JEREMIAH (Emily Frances Smith)	207
THE ORIOLE (Lulu Whedon Mitchell) [Poem]	209
THE ORCHARD ORIOLE (Addie L. Booker)	210
THE PRAIRIE WARBLER [Illustration]	213
APRIL BIRDS AND FLOWERS OF THE MISSISSIPPI GULF COAST (James Stephen Compton)	214
BIRTH STONES (Oliver Cummings Farrington) [Illustration]	216
APPLE BLOSSOMS AND THE WARBLERS (Grace E. Harlow)	220
RURAL RAMBLES (Berton Mercer) [Poem]	222
THE HORSE (John Ainslie) [Illustration]	225
A MELODY (Amanda M. E. Booth) [Poem]	227
THE VERBENAS	228
THE BLUE SPRING DAISY [Illustration]	228
THE LITTLE FEATHERED BOYS AND GIRLS (Blandina D. Miller) [Poem]	231
THE COTTON PLANT (Albert Schneider) [Illustration]	232
THE CLOUD (Shelley) [Poem]	236

EDITED BY WILLIAM KERR HIGLEY.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

203 Michigan Avenue, Chicago, Ill.

A. W. MUMFORD, PUBLISHER.

$1.50 a Year. 15 Cts. a Copy.

BIRDS AND NATURE.

MONTHLY, EXCEPT JULY AND AUGUST.

TERMS AND CONDITIONS OF PUBLICATION:

PRICE. Subscription price is one dollar and fifty cents a year, payable in advance, with 75 assorted pictures, $2.00; single copy, 15 cents.

POSTAGE IS PREPAID by the publisher for all subscriptions in the United States, Canada and Mexico. For all other countries in the Postal Union, add 30 cents for postage.

CHANGE OF ADDRESS. When a change of address is ordered, both the new and the old address must be given. Postmasters are not allowed to forward second class matter until postage is sent to prepay charges. It costs two cents per copy to forward this magazine. Subscribers who do not observe this rule should not ask us to send duplicate copies.

DISCONTINUANCES. If a subscriber wishes his magazine discontinued at the expiration of his subscription, notice to that effect should be sent, otherwise it is assumed that a continuance of the subscription is desired.

HOW TO REMIT. Remittances should be sent by check, draft, express order, or money order, payable to order of A. W. Mumford. Cash should be sent in registered letter.

AGENTS. We want an energetic, courteous agent in every town and county. Write for terms and territory.

RECEIPTS. Remittances are acknowledged by change of label on wrapper, indicating date to which subscription is paid.

MAGAZINES from 1897, $1.50 a year; single numbers, 15 cents.

BOUND VOLUMES, I to IX, each 8vo, 244 pages, from 40 to 60 colored pictures, 8x10 in, cloth, $1.50. Double volumes, half morocco, $3.00. Nine single volumes, cloth, $9.00. Four double volumes, half morocco, $8.00.

Exchange price for bound volumes when magazines are returned: Single volumes, cloth, 75 cents. Combined volumes, half morocco, $1.50.

COLORED PICTURES, in monthly sets of ten, for 1897, each set 15 cents, or 12 sets $1.50. For 1898, each monthly set of eight, 12 cents, or 12 sets for $1.10. For 1899 and other years, monthly sets of eight, 12 cents, or entire year's collection, 10 months, $1.00. Pictures assorted as desired, 2 cents each; to subscribers only 1 cent each. No order received for less than 20 pictures. The 424 pictures, $4.24.

Twenty percent discount to subscribers on bound volumes and magazines.

PREMIUMS. Either of the following colored pictures sent free with subscriptions: Song of the Lark, 18x21; Gladstone, 18x24; The Golden Pheasant, 18x24; Birth of the American Flag, 12x18; or Twenty Pictures from magazine.

All letters should be addressed to A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago.

TO THE READER OF THIS MAGAZINE • • •

Eleven volumes of BIRDS AND NATURE were completed with the May 1902, number. These volumes contain illustrations of Birds, Birds' Eggs, Flowers, Mammals, Fish, Insects, Fruits, Shells, Minerals and Gems; and the text contains several valuable articles from the pens of well-known writers and educators. We shall continue to have BIRDS made the chief attraction, and at least four bird-plates will appear in each number.

Among the color illustrations of future numbers the following may be mentioned:

JUNE, 1902.

Swallow-tailed Kite.
Alice's Thrush.
Carolina Chickadee.
Violet-green Swallow.
Old Faithful Geyser.
Starfish.
Flowers { Sea or Marsh Pink. / Fire-weed.
Medicinal Plant: Tobacco.

NOTICE.

Following the custom of past years, this magazine will not be issued during the months of July and August.

The preparation of the birds and other animals for photographing in colors will be under the direction of Mr. Frank M. Woodruff, of The Chicago Academy of Sciences. Mr. Woodruff will also assist the Editor in the selection of subjects.

During the publication of the eleven volumes of BIRDS AND NATURE the following 496 colored plates have appeared:

301 Birds.
67 Mammals.
34 Flowers.
26 Medicinal Plants.
10 Fruits and Nuts (20 species).
10 Insects (75 varieties.)
10 Landscapes.
7 Minerals and Ores (48 varieties).
10 Gems.
7 Shells (74 species).
5 Fishes.
4 Reptiles (Turtles and Lizards) (4 species).
3 Birds' Eggs (49 species).
1 Polished Wood Sections (6 varieties).
1 Showing Change of Color in Birds' Feathers.

A. W. MUMFORD, Publisher, 203 Michigan Ave., Chicago

F 1705

SMITHSONIAN INSTITUTION LIBRARIES
3 9088 01316 8927